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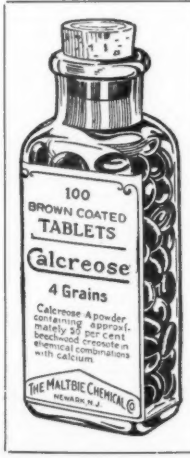

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RICHMOND, VA., DECEMBER, 1923

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Original Communications

SURGICAL STUDIES IN THE SO-CALLED FUNCTIONAL PSYCHOSES.*

By JOHN WILLIAM DRAPER, M. D., F. A. C. S., New York, N. Y.

Surgical studies looking to the relief of the mentally afflicted are not new. It is the trend which is new. Heretofore, such surgical work as was done was directed largely, if not exclusively, toward the relief of malformation, both congenital and acquired, of acute infections, and toward the removal of tumors. With the advent of aseptic surgery a great deal of work was done upon the female pelvis and upon the cranium. The results were disappointing. It was reluctantly to be admitted that the application even of aseptic surgery could avail little or nothing in raising the discharge rate at the State Hospitals for the insane. With the acceptance of this depressing fact it was natural that the views of the fatalists should again predominate; and that those who sought to interfere with so-called "inevitable" events, were returned to the discard. For from time immemorial there has existed in the study of this branch of human disorder, as indeed of all human disorders and all fields of human endeavor, two diametrically opposed schools or systems. The one viewed the problems from a theistic or spiritual standpoint; the other, usually much in the minority as regards numbers, based its reasoning upon material standards. It urged, then as now, a physical basis for life, and that, as there could be no function without form so there could be no aberrant function without aberrant form. The protagonists of these two schools have left traces of active and interesting strife dating back to early Egyptian history, but the written record of the conflicting standards by which human beings have sought to interpret the limitations, both physical and mental, imposed by disease upon their own kind, has been more definitely chronicled since the early days of the Christian era. Anyone who is interested in studying the cause of the divergent opinions, which at present exist in the viewpoints of the men who have given their lives to the study of the insane, will recognize at once that these differences are due to the presence today of these two great schools of thought. They may be referred to as theological and scientific, and the divergencies of opinion so strongly marked in the circumscribed field of psychiatry are the natural result of the age-old conflict between theology and science.* But, as there is good in each, let us hope that these two schools may soon be brought into productive co-operation.

After a five years' experimental study of the intricate physical conditions to be found in the bodies of patients who are mentally afflicted, it would seem to the writer urgent that the exponents of the metaphysical school should hasten to join forces with the physicists, as the growing school of the literal adherents of Virchow may properly be termed. For while it is true that in the last generation, and even earlier, many of the props have been taken from the metaphysical interpretation of medicine, particularly as regards the causation of ordinary bodily ailments, there yet remains and will always remain a halo of interest and a just reverence due the supernatural. Is it not true that a curb has been put upon our tendency to explain by physical interpretation problems, both of mind and body, because of the fear that in so doing we may violate that something within us which grants reverence to the supernatural and which causes us to fear that our religious beliefs may be damaged or taken from us by the interpretation of mysteries upon physical facts. Most of us are demonologists and it is easy to believe in the miraculous origin of insanity. However, the amazing discoveries of modern science, far from weakening our reverence for the unattainable, go far to strengthen and sustain it. Witness

*Read by invitation at the fifty-fourth annual meeting of the Medical Society of Virginia, October 16-19, 1923.

*J. W. Draper, The Conflict between Religion and Science, Appleton and Co.

the new proof of the immortality of the light wave which travels unaltered through thousands of light years. Is not this vibrant energy indeed a part of ourselves and what therefore is to be feared of facts which make its relationship to us clearer? Is the proof that the safety coefficient for the kidney is identical with that of a steel bridge a disturbing fact? To me it suggests a probable relationship between vertebrate life and an inert element—a matter of deep religious import! However this may be, it is true today that the great stronghold of the metaphysical school lies in the interpretation and treatment of disorders of the mind. From having once occupied an impregnable position of complete autocracy regarding the ailments of the body, the metaphysicians have come step by step, as these have been placed by scientific study upon a natural physical basis, to occupy an insignificant position in the interpretation and treatment of bodily conditions. Not so in the domain of the mind. Here the philosophically minded modern representatives of the ancient theurgists of the Nile hold as undisputed control as did their learned progenitors. For the voice of the Virchowist who is working in psychiatry is small indeed. Perhaps it is the not far distant memory of the fate which overtook the purely philosophical interpreters of bodily disease, first at the hands of the Greeks, then of the Alexandrian school and then of Virchow, that leads this school today to resent the intrusion of modern scientific methods. The reports of the National Committee of Mental Hygiene show that, since 1880, functional insanity has increased in the United States four hundred and sixty-eight per cent while the population has increased only one hundred and twelve per cent. Metaphysical therapeusis, therefore, has signally failed.

When about five years ago Henry Cotton,* the able Director for the past twenty years of the State Hospital for the insane at Trenton, having in his efforts to do something for the insane exhausted the fields of organotherapy and heredity, turned his attention to a study of toxemia as a causative factor in mental disorder it was certainly an auspicious move. For it gave to modern surgery the opportunity to treat through the removal of hidden foci of infection patients who hitherto had been looked upon as having nothing the matter with them physically. Amid a storm of disapproval he has conscientiously striven to show that in all so-called functional cases there is a physical basis for the disturbance of function. It has resulted, in his own words, simply in an enlargement of the toxic group long recognized and adhered to by the English writers and practitioners in spite of the rising tide of psychoanalysis. In the course of this work he has changed the nature of this great New Jersey institution from a custodial home, where seventy per cent of those who were committed to it remained to suffer and to die, into a modern hospital where, as a result of modern surgical and medical therapeusis, eighty-six per cent of the so-called functional group are discharged to their homes. When it is considered that these statistics are based upon the cold figures of a state institution; when it is known that no less than four hundred thousand dollars have been saved for the state by the introduction of these methods during the past five years; most of all, when the relief of human suffering worse than any bodily pain is considered, surely it is time that unbiased attention be given to this important matter. It is time that the profession as a whole should take a hand in the problem of the insane.

The treatment of the insane at Trenton differs fundamentally from that in vogue elsewhere in this one respect. Once it is recognized that the patient belongs to the great and rapidly increasing group of so-called functional psychotics, rather than to the senile, congenital, alcoholic or syphilitic groups, the mental phenomena are immediately relegated to the background and the physical condition of the patient is given intensive study and care. Now this simply means that he is put into a pavilion which is as nearly as possible represented by your splendid modern hospital at Roanoke. The case is approached by historical, X-ray and objective methods, just as though the patient were one suffering from so-called rheumatism, heart or kidney disorder, or any other condition now commonly known to result from focal infection. You will gather rightly from this that persons presenting a so-called functional psychosis could and should properly be treated in a general hospital. This assumption is entirely correct. For, as may be observed in the surgical wards of the State Hospital, there is little or no trouble in the administra-

*Defective Delinquent and Insane, Princeton Press, 1921.

tion of modern surgical therapeusis to this distressed group of the mentally afflicted.

The most common site for the focal infections is of course oral, while the next most common is in the cervix. In five years' duty as attending surgeon to the State Hospital, I have never yet seen a patient with the diagnosis of a so-called functional psychosis free from well-defined and generally multiple streptococcus and colon bacillus infection. Not alone are the teeth involved, sometimes those which look the best are in reality the worst, but painless osteomyelitic lesions have often extended into the body proper of the maxillary bones and in many instances into the antra. The painlessness of these focal lesions constitute their gravest menace.*

The tonsils should always be removed in a psychotic, whether pus can be expressed from them or not, because in a notable number of instances large abscesses have been found in the centre of a tonsil after removal which from the outside appeared to be perfectly normal. Less than one per cent of the group of fourteen hundred patients detoxicated by operation at the State Hospital and discharged during the past five years have been free from oral infection. Eighty per cent of all the female patients have presented infection of the cervix. A few patients among these do not have sufficient leukorrhea to annoy or distress them, so that it is important to remember that the character of the infection rather than its extent is a point worthy of careful consideration. Except when the uterus, the ovaries and the tubes are evidently damaged beyond repair, and this decision is not reached until after prolonged observation and always after the cervix has been enucleated by the Sturmdof method, the pelvic viscera are never touched in this clinic. We consider that the Sturmdof procedure is a most beneficent one. This is doubtless because it is based upon the modern understanding of the causes and of the methods of extension of gynecological disease. Briefly, this is that the infections known to be destructive to the ovaries and tubes never or almost never travel upward through the uterine canal, but always laterally through the lymphatics. Easy practical proof of this is to be obtained by any one who, on finding a mass in the pelvis, will, instead of opening the abdomen, enucleate the compound racemose glands of the cervix and wait a matter of six months. Unless the secondary focus in the pelvic straits is of sufficient size and of such duration as to permit of its being self-continuing, the mass at the expiration of this time will usually have disappeared or have undergone sufficient recession, both in size and in tenderness, to render abdominal operation unnecessary. This infection is non-venereal.

Among the males, as reported by the late Frederick Smith,* one-third show extensive non-venereal pathology in the seminal vesicles and it is evident that in these there is also often concurrent involvement of the prostate. The treatment, therefore, of pelvic infection in the male for the purpose of relieving a psychosis is much more difficult than in the female.

Personally, having been deeeply interested for more than twenty years in the problem of the cause of death in intestinal obstruction and in the vaguely understood condition now rather loosely known as gastro-intestinal toxemia, I have given most of my time at the State Hospital to this phase of the work. When the director of a hospital has reason, based upon the results of five years' study, to expect a discharge rate of over eighty per cent, he naturally begins to suspect that there is something serious the matter with a given patient who remains in the hospital beyond the average time after the usual oral, dental and cervical work has been done. Such patients should be carefully studied by the X-ray to find if there are any abnormalities, either functional or morphological, in the alimentary canal. Not infrequently there is marked delay on the left side of the colon and we have found that in many instances this is due simply to unrecognized rectal disease. A chronic folliculitis or a simple intermuscular fissure will often cause not only the left-sided delay referred to, but will actually bring about amazing interferences with gastro-duodenal function. I have repeatedly seen this to occur, not only among psychotics, but among their first cousins, the psychasthenics and neurasthenics. Nor are they "Virginia" cousins, but more closely related than at present generally believed. These unfortunates frequently fail to empty the stomach after eight hours. When it is recalled, however, that in addition to the

*Draper, J. W., Preventive Surgery, Jour. N. J. Medical Society, 1922.

*Amer. Jour. Urology, 1922.

well-known nervous equipment of the rectum there is to be added no less than five recently recognized connections of this important organ to the sympathetic system, it is not to be wondered at that profound abdominal reflexes originate there. Direct radial section in the posterior mid-line of both sphincters almost invariably restores stomach function and relieves the nervous symptoms. Again, this procedure is well within the hands of any competent surgeon; it is simply for him to get the opportunity to practice it upon the psychotic patient.

But there remains fifteen per cent of psychotics who do not improve in spite of all this minor operative procedure and of the well-recognized and vitally important treatment by vaccines and sera. These patients themselves or their parents will always give to a person qualified to ask it the characteristic surgical history of chronic intestinal disease. They have been constipated for years, often since birth; they have had chronic bilious disorder; they have had nausea, vomiting, vertigo; sick headache; they have failed in school; they have had "nervous breakdowns" or have been called "neurasthenics" for years. About twenty-three per cent of them have had the appendix removed because they presented in most instances, I believe, evidence justifying that operation. But they have not been improved. Satterlee has found a similar condition among so-called "neurasthenics." Indeed, one of the most important results of our surgical studies among the adjudged insane is the proof that in many ways the psychoses should be considered as *terminal conditions* of antecedent neurasthenia, schizophrenia, psychasthenia, nervous breakdown, etc., all of which are now known to be due to physical causes. The psychosis is often a symptom only of a general toxicosis. By the usual methods, therefore, it is as easy to determine that a given psychotic patient has a so-called right-sided surgical abdomen as would be true in the case of any other gastro-intestinal invalid. In the past five years I have removed the colon in whole or in part in three hundred cases at the State Hospital. All this mass of diseased tissue has been carefully studied and preserved in the pathological laboratory of the hospital. The lesions do not spread to the ileum via the lumen, but, if at all, through the lymphatics. There is evidently a law that the lumen of a viscus does not transmit infection, as noted in the case of the uterus and also of the ureter. James Ewing, pathologist to Cornell University and consulting pathologist to the hospital laboratory, has generously given enough of his time to furnish a report upon the condition of the excised bowel. This report has been published in full. (*American Journal of Medical Sciences*, No. 3 Vol. CLXIV, p. 322). Its importance and authenticity, however, are so great that I quote from it as follows:

"I have examined sixteen specimens of colon and ileum removed at operation. The great majority of the specimens show very definite gross anatomical lesions which have resulted from chronic intestinal stasis and the ensuing chronic catarrhal inflammation. In several cases the lesions are extremely marked, in many they are well marked, while in a few there are no definite changes that can be regarded as more than minimal variations from the normal. The most marked and constant lesion is pigmentation of the mucosa . . . this is lodged in large polyhedral cells and . . . is fully recognized as a sign of chronic intestinal stasis and intoxication. It is sometimes associated with anemia and at times with severe and even fatal dystrophies of nervous and muscular tissue. Pouching of the intestinal wall from one to two cm. in depth was observed in most of the cases. The wall of the pouches was thin, the mucosa at the bottom generally eroded, sometimes ulcerated. Through such erosions and ulcerations it is obvious that absorption of fluids and bacteria readily occurred. In general the impression gained from the study of these specimens was that the clinicians were dealing with extensive and somewhat unusual grades of chronic intestinal stasis and catarrhal inflammation with its sequels. The isolation of various bacteria from the mesenteric lymph nodes does not appear to have particular significance. More important is the demonstration of hernias, pouching, thinning of wall, pigmentation and ulceration of the mucosa which together form an impressive anatomic basis for the theory of intestinal intoxication, which undoubtedly existed in severe degree in the cases exhibiting such lesions."

"Finally, I would venture to express my personal opinion that extirpation of the af-

fected portions of the cecum and colon was justifiable and probably the only effective means of relieving the condition found in the advanced cases, while in others, with slight changes the condition could have been met by less radical means."

It is to the last paragraph of this important report that I would direct your particular attention. It voices the desire of every clinician, certainly that of every surgeon who has done a colectomy, that some tangible means must soon be found by which to recognize the presence of these destructive conditions in the colon, whether they be bands or other abnormalities and to correct them before the pathological conditions in the bowel have advanced to such a degree as to render extirpation of the cecum and colon, in Dr. Ewing's words, "justifiable, and probably the only effective means of relieving the condition." In spite of the high mortality, I have felt amply justified in creating this unique group of three hundred pathological colons removed from psychotic patients, if for no other reason than to prove that something must be done for the relief of this type of the mentally afflicted before the bowel is irreparably damaged. This should and can be done before the patient is committed, for the pre-psychotic symptoms are usually well defined. I believe that no one has contributed more sound and practical data upon this problem of prevention than Alfred S. Taylor. His work upon intra-abdominal adhesions is, and will remain, a classic.

During the past six months I have had immeasurable help and encouragement from Dr. John W. Churchman, who has taken charge of the laboratory. Not only has he inaugurated studies upon the permeability of the diseased colon and upon the practicability of using the dyes with which his name is so closely associated, but he has made a surgical analysis of the results of the last 164 colectomies, particularly in relation to mortality. It is encouraging to have the active co-operation of so highly trained and versatile a surgeon, because it gives much added confidence and certainty to this experimental surgical research. Dr. Churchman's tables will be published at a later date, but briefly they place the operative mortality at thirty-one per cent. This can undoubtedly be lowered by a further systematic study of the cause of death, but the operation will always remain a formidable one. Aside from proving a very direct relationship between the mental symptoms and the diseased bowel, the most important outcome of these studies today is that a pre-psychotic diagnosis must be made, and such preventive treatment be instituted as will save the colon from degenerating to such a degree as to necessitate colectomy. There is no *problem in medicine more pressing* than that which relates to the causation and treatment of the so-called functional psychoses. If we can take the age-old mystery out of insanity and place it upon the same practical footing as other bodily diseases, taking the good from each school, it will result in saving millions of dollars to the state and untold human suffering.

9 *East Fortieth Street.*

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A NEW SYSTEM OF DIETETICS IN THE LIGHT OF EUROPEAN EXPERIENCE WITH THE PROBLEM OF NUTRITION.*

By SAMUEL NEWMAN, M. D., Danville, Va.

Late Volunteer Physician, Children's Clinic, University of Vienna.

During the recent war, and the years following it, the problems of nutrition occupied a very prominent place in the minds of the European peoples. Germany, because of the effective blockade against her, was particularly concerned with the problem of nutrition from every angle. It is to be expected that just as in surgery some great lessons have been taught by the war, some lessons should also

*Read at the fifty-fourth annual meeting of the Medical Society of Virginia, in Roanoke, October 16-19, 1923.

have been taught by it in the field of nutrition. We would naturally expect to find in the German literature a summation of all our present knowledge of nutrition and practical methods for the rational feeding of large groups of people as well as individuals, as a consequence of the war and post-war experience.

Time will not permit me to bring this vast subject of nutrition even under a cursory review. I shall confine myself to a brief consideration of a few of the principles underlying a system of nutrition which was put into practice on a very extensive scale, and which I had an opportunity to study in Eastern and Central Europe as member of a Medical Commission and as a student at the Children's Clinic of the University of Vienna.

Energy Requirement.

Rubner[1] laid down the thesis that basal metabolism stands in relationship to body surface—not to body weight. The validity of this thesis has been recently reaffirmed by Lusk[2] on the basis of careful work. Rubner used the Meeh-Vierordt formula for the calculation of body surface. In this country the formula of DuBois is used, for which greater accuracy is claimed. However, in practice, because the use of formulae or charts is necessary, determinations of energy requirements are not made on the basis of surface area.

In 1914 Professor Pirquet, at the University of Vienna, began to work out a system of nutrition having as its basis quite different considerations from those enunciated by Rubner, yet incorporating his thesis that energy requirement is proportional to body surface. Pirquet discovered that in normal individuals there is a relationship between the sitting height, expressed in centimeters, to the body weight, expressed in grams. The sitting height—distance from top of head to sitting level—raised to the third power approximates ten times the body weight. Expressed in mathematical formulae, we obtain the following values:

$$Si^3 = 10\ bw$$

$$Si = \sqrt[3]{10\ bw} = 10\ bw - \tfrac{1}{3}$$

$$Si^2 = \left(\sqrt[3]{10\ bw}\right)^2 = 10\ bw^{\frac{2}{3}}$$

In the understanding of this last formula lies the core if the theory of basal energy requirement. The body surface is a function of two-thirds power of its volume. A simple example will make this clear. An infant weighing seven pounds will have a basal requirement of about 200 calories per day. The question now arises, will the basal requirement of an adult weighing 140 pounds, be 20x200, or 4000 calories? Our answer is no. Why? Because body surface is not increased by simple proportion to body weight. The increase in surface of bodies of similar density is a function of the two-thirds power of their volume.

By using Pirquet's formula the basal requirement of an individual can be obtained in terms of calories, as shown by Faber[3], by multiplying the square of the sitting height with 0.2 of a calory, or:

$$Si^2 \times 0.2 \text{ cal.} = \text{Basal metabolism.}$$

A person with a sitting height of 90 cms. will, therefore, have a basal requirement of $0.2 \times 90 \times 90 = 1600$ calories. The validity of this formula is established by the fact, as Faber has shown, that nearly the same values are obtained by it per meter of surface area as those of Rubner by using the Meeh-Vierordt formula.

In practice we are concerned with more than the energy requirement sufficient to cover basal metabolism. In prescribing a diet we must also provide for growth, in case of a child, and occasionally, for fat accumulation. All these values are obtained in the Pirquet system of nutrition by simple relationships to the sitting height of the individual in question. In order to be able to work with Pirquet's method, we shall have to acquaint ourselves with a new unit of nutrition which Pirquet has introduced. This unit is the value of 1 c.c. of milk of standard composition, and to which Pirquet has given the name *Nem* (Nutritionis elementum).

Biological versus Chemical Value of Foods.

In the last century, the consideration of, and the approach to, all problems of nutrition were in the light of chemistry. A great deal of valuable work has been done on the chemical analysis of foods, the work of Atwater in this country being particularly noteworthy. Soon after 1900, Fischer revealed the great variation in the composition of proteins from different sources, thereby introducing the idea of *quality* in nutrition.

The epoch making researches of Funk, McCollum and others have taught us the importance of the biological analysis of food stuffs. The splendid work on the deficiency diseases and vitamins is the result of the biological method of food analysis. The chemical analysis of a food no longer gives us a clue as to its adequacy. A food may be chemically right yet biologically wrong. McCollum rightly maintains that the practice of regarding calories as the factor of prime importance in the planning of the diet is inadequate.

The calory is a physical and chemical conception; it is expressive of the chemical era in nutrition and of the notion that heat production is the chief manifestation of life, instead of to regard heat as the by-product of vital functions, such as food intake, growth and reproduction. In place of the calory, Pirquet proposes a concrete unit which even the laity can readily visualize and with which every other food should be compared by the biologic method, a procedure now carried out in testing the adequacy of a diet with regard to the quality of protein or vitamin content.

Pirquet adopted 1 c.c. of milk (of standard composition), as the unit of nutrition. Milk, of all other foods, is physiologically best adopted to our digestive apparatus; it contains all food elements; the quality of its proteins is high; and provides for growth during the most active period of life. Milk is the most perfect physiological food. With the addition of small traces of iron, McCollum[4] was able to maintain an omniverous animal in a condition of normal growth and reproduction.

As a method of comparing the nutritional value of other foods with that of milk, Pirquet suggests the physiological method of substitution, instead of the chemical method of determining food values by the amount of heat they will yield by complete oxidation in the calorimeter. For example, a normal infant fed on milk would be given the food to be tested in place of a certain quantity of milk. If the infant will grow on this food, its nutritional value as compared with milk can readily be obtained.

Pirquet has thus opened up a new field of investigation in the field of nutrition. It must be admitted, however, that Pirquet and his school did not follow their own lead. His milk-unit (nem) values of food have not been worked out on the basis of physiological substitution, but were simply obtained from the best established caloric values. Yet Pirquet's unit, the nem, is something concrete and replaces, at least for practical dietetics, the somewhat indefinite and abstract conception of the calory concerning which there arises no little confusion even among medical men. In the first place, not all of us remember, when we speak of calories, which one is meant; the large or small calory. In the second place, to speak of nutritional needs in term of calories, especially to a lay public, is like speaking of colors in terms of wave length. The fuel value of food is defined by Atwater and Kent[5] in the following terms:

"By fuel value is meant the number of calories of heat equivalent to the energy which is assumed the body would be able to obtain from a pound of a given material, provided the nutrients of the latter were completely digested."

Besides this definition of Atwater and Kent, I shall place the Pirquet definition of *food* value, rendered into English.

"By *food* value is meant the number of milk units contained in a given food as compared with an equal weight of milk."

We thus see that in the Pirquet system of nutrition we do not go out of our element in order to seek for a definition of food value. We drop the caloric term *fuel* value, and substitute for it *food* value in its broadest physiologic significance. We shall next consider another point in the Pirquet system of nutrition, the question of the minimum protein requirement in our daily diet.

Protein Minimum.

The optimum protein requirement of man in his daily diet has been a subject of considerable controversy. As it is well known, nitrogen or protein equilibrium may be maintained on different amounts of protein food. An excess of protein is not stored in the body but is used as an energy food. Chittenden[6] has been the chief advocate of a low protein diet. The Swedish physiologist, Hindhede, has performed a remarkable series of practical experiments whereby he demonstrated that people may be maintained on a high level of efficiency during long periods of time on a diet made up chiefly of potatoes, which is poor in proteins. The daily protein intake of Hindhede and his associates was about 39 grams.

In times of war the question of protein in-

take is more than of mere theoretical interest. Proteins are the most expensive foods and, for the sake of economy, it becomes necessary to spare them as much as possible. The function of proteins should be limited to the rebuilding or renewal of wasted tissues in the body and not made to supply heat or energy, as it happens when an excess of it is taken. Schick[7] well said that it is as rational to use the expensive animal proteins for the purpose of supplying body heat as it would be to use window frames, doors, and piano wood for the purpose of heating our stoves. Yet, on the other hand, it is important not to go below the protein minimum. Without sufficient proteins in our food to cover tissue waste and body growth, in children, national efficiency will soon be undermined.

The question of protein minimum is very important also from the clinical standpoint. Clinicians believe that the consumption of proteins above the optimum is not only an unnecessary luxury but also a harmful habit. The excess of protein is a harmful load on the kidney. The caloric value of 1 gram of protein in the calorimeter is 5.7 large calories. The oxidizable value of protein in the human body is about 4 calories. The non-oxidizable part of the protein molecule must then be excreted by the kidneys. A B. Macallum[8], in discussing recently the question of the intestinal mucosa as a portal to disease, calls our attention to the possible effect of proteins on another organ than the kidneys. Macallum makes the following significant remarks:

"It is probable that excess in diet, especially in its protein constituents, may task the capacities of the epithelial cells and diminish their power to react normally, with the result that they allow to pass through them, and to the underlying tissues and the circulation, the products of intestinal putrefaction, which in their healthy vigorous condition they do not permit to enter them. This would explain some of the pathological results of a high protein diet."

A. B. Macallum, then, takes for granted the injurious effect of a high protein diet from a bacteriological standpoint. In accordance with the older theory that the intestinal lining is synthetizing the amino acids which were formed in the process of digestion into body proteins, it is readily understood how an excess of proteins in the foods will overwork and exhaust the intestinal cells.

In the Pirquet system of nutrition the protein minimum is taken to equal ten per cent of the total caloric value per day. An adult with a caloric requirement of 3,000 would need 300 calories in proteins, or 75 grams of proteins. Pirquet does not state the protein requirement in absolute figures. He only says that whatever quantity of food one consumes the protein minimum should be ten per cent of the total caloric value. This idea seems very reasonable, since, as we know, the utilization of body proteins will vary with the amount of total food taken. If larger quantities of food are consumed, more secretions will be necessary and a proportionate larger tissue waste will result. The basis for the protein minimum in Pirquet's system of nutrition is human milk. Standard human milk has 1.7 per cent protein. One gram of protein yields 4 calories, or 6 nems. One hundred c.c. of milk will therefore have 10 nems in protein value.

Time will not permit me to discuss one more point in the Pirquet system of nutrition, that of food concentration. By food concentration is meant the relation of food value to weight, or $\frac{\text{food value}}{\text{weight}}$ Internists and pediatricians are fully aware of the importance for the clinic of the subject of food concentration. As much as the subject of food concentration is of extreme importance in dieto-therapy it never rested upon a rational system. For instance, when one reads about thick cereal feeding in cases of pylorospasm he is never sure of the caloric value of the cereal per unit of volume or weight. Pirquet introduced system into this subject by adopting a logical standard of food concentration. Any food which contains 1,000 nems (milk units) in one liter of volume, or kilo of mass, is called *equal* food. This means it is equal in concentration with the natural food, milk, which also has 1,000 nems in a volume of one liter. I will not dwell longer on this point, yet I have shown how Pirquet standardizes and rationalizes the whole subject of dietetics.

I shall now summarize the main points in this paper and will demonstrate the actual working of this system of nutrition from my own cases. This system is not diet-kitchen play but daily life through many years in the great Children's Clinic of the University of Vienna.

The feeding program of hundreds of thousands of children in Europe was carried out in accordance with this system, and with most magnificent results. Personally, I had experience with this system for more than two years and with most gratifying results.

Summary.

1. One c.c. of milk is the unit of nutrition. This is called *nem* and is equal to 2/3 of a calory.
2. The nutritional requirement of every individual can be obtained from his sitting height.
3. Minimum, optimum, and maximum requirements can easily be obtained in terms of milk units by simple relationships to the square of the sitting height.
4. The relationships of food value to food weight are standardized and designated by a logical terminology.
5. This system of nutrition is the basis of the Vienna pediatric school and enjoyed a trial and successful application on the most extensive scale.

Illustrative Cases.

Case 1.—W. M., boy, nineteen weeks old. Full term, forceps case. Birth weight: 8.75 pounds. Artificially fed since second week. Present weight: 7 pounds, 10 ounces. Per cent underweight: 45. Diagnosis: Athrepsia; decomposition; and capillary bronchitis.

Treatment: The sitting height of the baby is 35. 0.3 of the sitting height squared (3dcn. siqua) is the minimum food requirement of the child. It was started with this minimum. The baby retained the food. On the following day I added 2dcn. siqua; that is 5dcn. siqua have been given (35x35x0.5 = 600 nems—or 6 hectonems). The food concentration was that of whole milk. The food was gradually increased, taking the maximum (35x35n) after two weeks of treatment. Together with the increased nem, or caloric, intake the concentration of the food has also been increased; that is, more calories and lesser volume. In five weeks the child gained 5 pounds and 3 ounces, the percentage of underweight being only 14. Throughout these five weeks the protein intake did not exceed 10 per cent. A normal child should have gained during the same period at the same age 24 ounces. Our patient gained 83 ounces. This atrophic infant has manifested a "living potential" of 3.45x24.

Case 2.—F. A., boy, thirty-one weeks old. Premature, forceps delivery. Birth weight: 5 pounds. Artificially fed since birth. Present weight: 7 pounds, 10 ounces. Percentage of underweight: 43.5. Diagnosis: Athrepsia and acute intestinal intoxication.

Treatment: Sitting height of infant is 36. The first day only the minimum was given. On the following day 5dcn. siqua (36x36x0.5) were given. At the end of the second week the food intake had been increased to 8.5dcn. siqua. The food concentration was 3/2; that is 1,000 calories (1,500n) are contained in one liter (1 and ½ times the concentration of milk). In three weeks the child gained 34 ounces (2 pounds and 2 ounces.)

The ingredients of the food formulae in both these cases consisted of whole cow's milk; Mead's Dextri-Maltose; a few grams of barley flour; and water.

Case 3.—B. L. C., girl, six years and seven months old. Diagnosis: 20 per cent underweight due to faulty food habits. Treatment: The sitting height of the girl is 61 cms. She has been given a diet of 5dcn. siqua. (61x61x 0.5 = nearly 2,000 nems). The diet was made up of special articles with the idea of assuring myself that the patient should eat in excess of the diet. From August 14th to October 2nd of this year the patient gained 10.5 pounds. The normal gain for a period of six weeks at that age is about 9 ounces. The girl therefore gained $\frac{168 \text{ ounces}}{9} = 17.5$ x normal gain.

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DIARRHOEA IN INFANTS.*

By St. GEO. T. GRINNAN, M. D., Richmond, Va.

The large mortality caused by diarrhoea in infants is an important field for preventive medicine. Many mothers have lost the first child from diarrhoeal trouble and a life was sacrificed in order to educate her to save those that came later. While there is much to be learned in the prevention and treatment of diarrhoea in infants, valuable information has been acquired. Diarrhoea is still one of the largest causes of death in infants under two years of age. The disease is largely preventable. The various departments of public health have done very valuable work in instruction of mothers, and making milk safer.

Diarrhoea in infants is the result of several causes. The classification most commonly used now is infection, fermentative and mechanical. Diarrhoea is not common in breast fed infants. In the case of breast fed infants diarrhoea is almost certainly infectious and not fermentative. Some obstetricians give an infant six per cent solution of sugar water while waiting for milk to come in the mother's breast. This is a bad habit. Plain water and not sugar water should be given. The habit of giving any purgative to a new born infant is dangerous. A purgative is often used in icterus neonatorum with only harmful results.

I know one physician who lost his first two children before he learned to remove from the breast an infant suffering from breast milk infection. In breast milk infection there is often very little diarrhoea.

Here in Virginia infectious diarrhoea begins about the middle of May and is prevalent until September. A smaller number of cases are seen in the colder months. It is a very safe plan to have all milk boiled for an infant under eighteen months of age from May 15th to September 15th. During this period anti-scorbutics can be given, and heliotherapy used, as an anti-rachitic.

Probably the most common cause of diarrhoea in infants is intestinal fermentation caused by excess of sugar. The products of fermentation irritate the intestinal mucosa but the mucous membrane is not attacked by the bacteria. (Practical Infant Feeding by Hill page 296.)

Under normal conditions the small intestine is fairly sterile. The child can only absorb a certain amount of sugar and, when an excess is given, it passes into the intestine and ferments. Overheating of the body from hot weather or too much clothing are important causes of fermentation.

Infected milk is also a cause of sugar fermentation. The fermentation of sugar produces acids which irritate the mucosa and cause diarrhoea. Acetic acid is a common product of sugar fermentation in the intestine by bacteria. Other acids such as formic and butyric are also formed. Acetic acid is very irritating and the mucosa is injured, this injury reduces the anti-bacterial function, permitting harmful bacteria to pass into the circulation. It will be remembered that acetic acid is used to remove warts and corns.

There are various degrees of this condition; season may or may not be a factor.

In mild cases omission or reduction of sugar will cure the case. A purgative is not necessary. If the case has fever and there is no diarrhoea, a purgative is necessary. No food is given but barley gruel for twelve or twenty-four hours. One grain of saccharin to the pint of barley gruel will make it palatable. Sugar should be omitted for one day and sometimes longer, rarely over three days.

For the past six or seven years I have used protein milk in fermentation cases of diarrhoea. The high protein tends to make the intestine alkaline. Two purposes are thus obtained, the intestine is rendered alkaline or the acidity reduced, and the alkali reserve of the body which has been heavily drawn upon is restored. Thus acidosis which is usually present is checked and the irritating acid in the intestine neutralized. Protein milk can be used with breast milk, with barley gruel or skimmed milk. Finkelstein's formula was made with lactic acid milk. Some pediatricians have adopted the lactic acid milk and use little protein milk in the lactic acid milk. Protein milk can be bought on the market and it is quite easily made at home. A very serviceable preparation can be made in two hours. I have had it made in the homes of rich and poor, and in hospitals, for years. It is prepared as follows: Three junket tablets or three teaspoonfuls of essence of pepsin are added to one quart of milk; keep at a temperature of 100° F. for 30 minutes; break up the clot and strain in cheese cloth or fine wire sieve.

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It is best to let it strain for an hour and safer to let it strain in a refrigerator. The curd is rubbed through the sieve several times in order to insure fine devision of the casein. This casein powder can be used in barley gruel or skimmed milk; it is more commonly used in fat free lactic acid milk. The amount of protein milk or casein obtained from one quart is 5 or 6 ounces. To this is added one pint of fat free lactic acid milk and enough water to make one quart. This will give low sugar 1.5 per cent, high protein 3.5 per cent, fat 2.5 per cent.

Unless some sugar is used acidosis may result. For the first day of treatment, saccharine may be used to make the protein palatable, the second day enough sugar to make a 3 per cent sugar, gradually increasing to 6 per cent. As the case improves, protein milk is not needed longer than one week or ten days.

Lactic acid milk suits a large number of these cases. If lactic milk cannot be obtained, skimmed milk can be used. It is worth while making the lactic acid milk as it is superior to any other milk product in the gas bacillus cases. It is made in twenty-four hours by inoculation with lactic acid bacillus. The milk should be previously boiled to kill other bacteria. Marriott, of St. Louis, has had marked success with lactic acid milk and Karo syrup.

Colonic irrigation is used in many cases more than is desirable. One irrigation may be used early in the disease but rarely later in the disease.

Owing to great loss of fluid in diarrhoea, water has to be given in large amounts. In many cases of extreme dehydration, intraperitoneal saline solution is a valuable means of restoring fluid. Physiologic saline solution is used at a temperature of 100° F. One teaspoonful of salt to one pint of water gives the normal solution; 100 to 300 c.c. can be given at a time, according to the size of the baby. It can be repeated in twelve or twenty-four hours. Rarely is it necessary to give more than three injections. As an alkali, precipitated chalk is more valuable than the soluble soda which is largely absorbed in the stomach. I rarely use either bismuth or opium in diarrhoea.

Infectious diarrhoea presents a different problem. Here we have protein putrefaction which is more dangerous than sugar fermentation. The dysentery bacillus is the usual cause though other bacteria are found. Unclean milk is the common cause. Failure to wash the breast before and after nursing is a cause in cases occurring while breast fed.

Infectious diarrhoea can be started by fermentative diarrhoea. This disease is infectious and can be transferred by soiled napkins, "fingers, food and flies."

The stools are usually alkaline and are not especially offensive in odor. Blood is common in the stools of infectious diarrhoea, while more pus is seen than in fermentative diarrhoea. The treatment of this form of diarrhoea is different from the diarrhoea caused by infections. An initial purgative is usually required. This should be a smooth purgative such as castor oil. It is rare to have to repeat the purgative. Constant purgation is not safe. One dose of castor oil will often produce blood seen by microscope, and calomel will produce mucus and blood in the stool of a healthy child.

All food is to be withdrawn for twelve or eighteen hours. Water is given every hour. After the starvation, an eight per cent sugar solution in barley gruel is given for one or two days. Dextri-Maltose is a good sugar to use. Milk is then given in diluted form. Skimmed milk or fat free lactic acid milk is used, the protein and fat kept low. Barley gruel is a good diluent, beginning with 1/3 or ¼ milk.

The gas bacillus type of infection presents a problem of feeding different from the infectious type. In this type the treatment is more like the treatment of fermentative diarrhoea; a low sugar and high protein is used. The gas bacillus will thrive on a high sugar but does not thrive on protein. The lactic acid milk is excellent for gas bacillus diarrhoea cases. In this class the protein lactic acid milk excels. Saccharine can be used for the first one or two days, then lactose not over 4 per cent, gradually increasing as the patient improves. During the first day of starvation a simple test will determine whether the case is infectious or gas bacillus. If a small quantity of milk is boiled and put into a glass tube with some of the bowel movement, the milk will coagulate and have holes in it like cheese and smell rancid. For vomiting I have found stomach washing with a solution of bicarbonate of soda superior to any other treatment. Mechanical diarrhoea is usually in the older child and is due to eating heavy coarse food, especially fruit. Vomiting is usually severe.

Purgation is necessary; no food except water should be given. If acidosis occurs from excessive vomiting, soda bicarbonate can be given by bowel, 6 per cent solution, a pinch of starch being used to prevent irritation. Lactose solution can soon be given in these cases.

I have tried to point out the necessity of classifying diarrhoea in infants as the treatment depends entirely on the cause of the diarrhoea.

DISCUSSION.

DR. SAMUEL NEWMAN, Danville, Va.: I wish to ask if Dr. Grinnan uses seventeen per cent (17%) sugar solution with new-born babies, as Schick recommends, to prevent loss of weight.

DR. GRINNAN, closing: Fifteen per cent is often used in cases of dehydrated children; three times the caloric value is sometimes essential.

925 *West Grace Street.*

THE USE OF GLUCOSE PER RECTUM IN THE FIRST STAGE OF LABOR.*

By M. PIERCE RUCKER, M. D., Richmond, Va.

Glucose therapy has recently had a prominent place in the treatment of eclampsia and the toxemias of pregnancy. Titus[1] has shown that the liver cells are quickly depleted of glycogen in toxemia and that a depleted liver cell is inactive so far as its detoxicating function is concerned. This is in accord with the previous experimental work of Opie,[2] Whipple[3] and others, upon animals. The St. Louis investigators used phosphorus and chloroform as poisons and rats as laboratory animals. The California workers used chloroform and dogs. It was found that a carbohydrate diet not only had a marked effect in protecting the liver against the toxic effect of the drugs, but also hastened the repair of the liver necrosis in a very remarkable manner. We know that, whatever the nature and origin of the toxin or toxins of eclampsia may be, the action upon the liver is the same as that of chloroform. Titus' work would indicate that glucose has the same power of protection against the action of the toxins of pregnancy as it does in the case of chloroform poisoning. He recommends either intravenous, rectal, or oral administration, according to the severity and the acuteness of the toxemia.

Following Titus' work, I have used glucose as he suggested, in a number of toxic cases at or near term, in which induction of labor was deemed advisable. I was impressed with the shortness of the first stage of labor as compared with previous similar cases in which glucose was not used. I therefore extended the use of proctoclysis with glucose solution to my non-toxic cases with gratifying results. The first stage was greatly shortened and the patients finished their labors strong and refreshed. This was especially noticeable in several patients seen in consultation, who had become worn out by a long tedious dilating stage.

Impressions, however, are very poor material for a medical paper. In order to have something to back up my impressions, and to be able to give you some tangible facts, I have gone over all my normal cases in which I have induced labor with bags and used glucose per rectum. The use of bags at term gives a more uniform result, especially in regard to the length of the dilating stage, than is the case with spontaneous labor. Both precipitous and long tedious labors are eliminated. In the language of the statistician, the coefficient of deviation is smaller. In a previous paper[4] before this society, I presented my results with bags and version at term. At that time, I found the average duration of labor, estimated from the time the bag was placed until the expulsion of the afterbirth, to be 13.68 hours for primiparas and 7.88 hours for multiparas. In the present series, the cases were handled in the same manner except that the patients were given a proctoclysis with five per cent glucose solution as soon as the bag was placed and the proctoclysis was kept up until the dilatation of the cervix was complete. Nothing was given by mouth during this time. The amount of hyoscin used was approximately the same in the two series. Usually, as in the former series, the bag was weighted until the patient began to have pains. However in a number of cases, especially in the multiparas, the dilatation was so rapid, that there was danger of having the delivery too close to the initial dose of morphin. In many of these cases where the softness of the cervix led me to believe that the dilatation would be rapid, the weighting of the bag was left off entirely.

I have used glucose in this manner with bags and version at term in fifty-four non-toxic cases. There were twenty-seven primiparas and twenty-seven multiparas. One of the multiparas had a funnel pelvis and her previous

*Read at fifty-fourth annual meeting of Medical Society of Virginia, in Roanoke, October 16-19, 1923.

labor was unusually long and tedious on account of inefficient uterine contractions. Another was so nervous and rebellious that she got practically no glucose. Her labor lasted 11 hours and 55 minutes. Two of the primiparas belonged to the funnel pelvis class, and their labors lasted just the same time, i. e. 15 hours and 15 minutes. The average duration for the primiparas was 7 hours and 52 minutes, the extremes being 3 hours and 30 minutes and 15 hours and 15 minutes. The average duration for the multiparas was 6 hours and 18 minutes. the extremes being 2 hours and 20 minutes and 12 hours and 15 minutes (the funnel pelvis case).

If the patient is in a hospital, the glucose is administered in a five per cent solution by the drop method. If I have not the facilities of a hospital, I vary the technic somewhat. When glucose is not at hand, a satisfactory solution can be made by dissolving a teaspoonful of Karo syrup in a pint of hot water. A gill of this can be given per rectum every hour, the patient being instructed to retain it.

Mode of Action

To what are we to ascribe these very definite clinical results? At first I was of the opinion that the action of moisture and heat upon the uterus, causing the cervix to relax and the fundus to contract more vigorously, was the chief factor. Murray[5] as far back as 1886 demonstrated that both heat (115° F.) and cold (60° F.) had a marked and immediate effect on the uterus, causing it to contract vigorously. The beneficial effect of hot enemas upon a lagging uterus has long been a common clinical observation. Recently there has appeared a very interesting book upon obstetric physiology by Vignes.[6] This author classifies sugar as an oxytocic. He is of the opinion that its ecbolic action is seen only after labor is well advanced and intimates that it is due to its energy supplying effect. Bossi[7] in 1893 described the ecbolic action of sugar in cases of inertia, and reported eleven cases. He used 30 grams of glucose in 200 c.c. of water.

It would be interesting to determine just how much benefit is due to heat, how much to fluid, and how much to the glucose. Perhaps at some future time I will be able to properly evaluate these three factors. At this time, however, I am presenting a practical paper and such theoretical considerations do not now concern us. The practical point is that, in the administration of glucose per rectum, we have a means of shortening the first stage of labor and of supplying the patient with much needed energy.

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Medical Arts Building.

CHRONIC OCCLUSION OF THE DUODENUM IN VISCEROPTOSIS; BASED ON A STUDY OF TWENTY-EIGHT CASES.*

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and
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The possibility of chronic obstruction to the duodenum where it is crossed by the root of the mesentery has been recognized for many years. Glenard,[1] in 1889, and Kundrat,[2] in 1891, called attention to the fact that persistent, partial constriction of the duodenum at

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this point was not an infrequent occurrence. In 1907, Conner[3] suggested this obstruction as an etiological factor in acute dilatation of the stomach. VanderHoof,[4] in 1917, reviewed the literature on the subject of dilated duodenum secondary to chronic arteriomesenteric occlusion and reported six typical cases. Since that time articles and case reports dealing with this condition have been published by a number of observers, among them Crouse[5] and E. L. and W. A. Kellogg[6, 7] in this country, and Hartmann,[8] Romme,[9] Ranzel[10] and Hurst[11] in the foreign literature. Chronic occlusion of the duodenum has become recognized as a clinical entity and its treatment has been placed on a sound anatomical and physiological basis.

The duodenum is normally slightly constricted where it is crossed by the root of the mesentery and its accompanying vessels. This was shown by Albrecht,[12] in the cadaver, and has since been confirmed by a number of investigators. The aorta and vertebral column just posterior to this point form an unyielding surface which acts like one lever of a nut-cracker. Anteriorly, the firm mesenteric vessels supply the other lever. Between these jaws passes the soft, compressible duodenum. It is obvious that any unprotected downward drag on the mesentery and its contained vessels will tend to close these levers. This is exactly what happens in the visceroptotic patient. But if there are deposits of fat in the mesentery and behind the parietal peritoneum, these bear the brunt of the pressure, and the closure of the jaws will be prevented. However, in the thin individual, these pads are lacking, leaving nothing to prevent the duodenum from being compressed. In addition, if the posterior lever of the nut-cracker is thrown forward, as is the case in increased lordosis of the lumbar spine, the chances of obstruction are necessarily much increased. This fact was brought out by Schnitzler,[13] and further emphasized by VanderHoof, one of whose patients showed the condition to a marked degree. The latter also called attention to the fact that in extreme visceroptosis where the intestinal coils rest on the pelvic floor there is less chance of dragging on the mesentery with its accompanying duodenal compression.

Bloodgood[14] and Jordan[15] suggested that in ileal stasis and constipation the increased weight of the terminal ileum and proximal colon tends to enhance the downward pull. The Kelloggs[7] advance this theory as the explanation of certain so-called bilious attacks in which the patient complains of severe constipation with nausea and the vomiting of bile, relieved by a laxative.

Another etiological factor in the condition is the perpendicular course of the jejunum in visceroptosis rather than the normal outward curve into the left renal fossa (Crouse[5]). This would increase the duodeno-jejunal angle, making the obstruction more complete.

Since VanderHoof's article appeared in 1917, twenty-two additional cases of dilated duodenum have come under our observation, and the whole series of twenty-eight cases of chronic duodenal occlusion has been studied with regard to the symptomatology and diagnosis of this affection. The result of treatment has been followed in a number of these patients with striking relief of troublesome, often serious, symptoms.

The clinical features of chronic duodenal occlusion are conveniently grouped under the following heads:

1. Vomiting. Persistent, or recurring vomiting is present in the majority of cases. This is generally associated with nausea, but in other cases there is simple regurgitation of food or actual rumination. Owing to the fact that the duodenal obstruction is infrapapillary, that is, below the entrance of the common bile duct, the vomited material is often tinged with bile. The regurgitation or the vomiting begins very soon after the meal is eaten. It is differentiated from the vomiting due to occlusion at the cardiac or pyloric ends of the stomach by the fact that in cardiospasm there is apt to be a definite difficulty in swallowing, while in pylorospasm vomiting is most apt to occur at the height of digeston, two to four hours after the meal.

Persistent vomiting may result in acidosis and death of the patient. Finney[16] and Bloodgood[14] have each reported fatal cases of dilated duodenum with a patent condition of the pylorus, and one of VanderHoof's early cases came to necropsy with typical arteriomesenteric occlusion and greatly dilated duodenum.

In other instances, rather frequent vomiting may occur without giving rise to any serious results over a period of some months. Under such circumstances the condition is often misinterpreted and thought to be a functional dis-

turbance or a neurosis. Many such cases of supposed "hysterical vomiting" have been completely relieved by rest-cures and forced feeding by physicians who attributed the splendid results to psychotherapy, and who failed to recognize the relief of the mechanical obstruction brought about by the posture and the increase of body fat.

2. Pain. Epigastric distress or pain is a common complaint, and is often associated with flatulence and a sense of fulness. It is often described as an aching or dragging pain. In quite a few instances, however, the pain may be acute and referred to the lower right costal border. In such instances the condition is often mistaken for gall-bladder disease. Occasionally the pain simulates that occurring in peptic ulcer. It has been stated by a few authors that chronic duodenal obstruction favors the occurrence of duodenal ulcer. This complication did appear in one of our twenty-eight cases.

3. Constipation. Obstinate constipation occurs in the majority of cases, while in a few instances the bowels are entirely regular. The stools show nothing abnormal.

4. Undernutrition. Patients with chronic duodenal obstruction are always below weight for their height. Many of them have lost weight, others have always been thin. The "habitus enteroptoticus" is indelibly stamped upon these cases, and this may be associated with exaggerated lordosis of the lumbar spine.

5. Sex and Age. The majority of cases occur in young women. In our twenty-eight cases there were twenty females and eight males. The youngest patient was a girl of 15 years, the oldest patient was a woman of 62 years. Sixteen of our cases were between the ages of 15 and 35 when they came under observation. It should be noted, however, that the condition is essentially chronic and in many instances the symptoms date back over a period of several years.

6. General Symptoms. Vague toxic symptoms are very common. The patients generally complain of weakness and exhibit signs of an unstable nervous make-up. Headache is frequent.

Physical examination in these cases reveals but little. The thin, visceroptotic type of individual with an acute costal angle and relaxed abdominal walls is observed. Occasionally there is some tenderness in the epigastrium, and at times a sense of resistance is felt above and to the right of the umbilicus.

Careful gastro-intestinal X-ray studies with good technique and vigorous manipulation in the attempt to completely fill the dilated duodenum confirms the diagnosis in practically every case. Occasionally a very extraordinary fluoroscopic appearance is observed, as was described by Jordan[15] in one of his patients with hugely dilated duodenum, It should be remembered, however, that the condition is often periodic, and examination when the patient is free from symptoms may fail to disclose any abnormality. This point has been recently emphasized by Hurst.[11]

The treatment of the condition is preferably medical but, if this is unsuccessful or inadvisable, resort to surgery is indicated. The medical treatment is chiefly mechanical and directed toward opening the "levers" to which reference has been made above. Since little can be done to change the posterior lever, our attention is naturally centered on the more mobile anterior one. Could we actually reverse the normal position of the body for sometime after each meal, the compression would obviously be relieved, but this is impracticable. Therefore, we resort to a modification of this posture.

In the beginning, until the patient falls into the routine, hospital treatment is advisable. The first essential is bed rest and the value of the prone posture is further enhanced by elevating the foot of the bed eight to twelve inches, and by instructing the patient to lie on his face as much of the time as possible. One hour after each meal the patient assumes the knee-chest posture for a period of twenty minutes. Immediately after this the patient goes through a set of two exercises. The patient lies flat on his back and comes to the sitting posture without the aid of the arms an increasing number of times. Alternating with this he raises the legs up to a right angle with the prone body. These exercises are gradually increased in number until each is done fifty times after each meal. In addition, the patient receives daily general massage with special attention to the abdominal muscles.

A vigorous attempt should be made to control the constipation which has been shown to be a possible etiological factor. Strong purgatives should be avoided as they only increase the difficulty in the end. The intelligent use of bran and mineral oil with plenty of water,

drinking a pint of water before breakfast and between meals, will usually prove efficacious.

At the same time every effort should be made to increase the deposit of mesenteric fat, else little will be accomplished. A general diet is given of good nutritious food especially rich in fats and carbohydrates. In addition, nourishment between meals and at bedtime is ordered. If the appetite is not satisfactory, simple tonics may be prescribed. For some months after the period of active treatment it is best that the patient sleep with the foot of the bed elevated, lie down one hour after meals, and continue the forced feeding.

The postural treatment of arteriomesenteric occlusion of the duodenum, with exercises and massage to strengthen the abdominal walls, supplemented by forced feeding and increase of body weight, will bring about complete relief of the condition in the vast majority of cases. So satisfactory have been our results that we look upon the above procedure as a therapeutic test and, if the response to medical treatment is not prompt and progressive, we are apt to feel that we are not dealing with an uncomplicated instance of this affection. In an occasional case, however, after the attempt at medical treatment has failed, surgical relief may be indicated. It should be recognized that gastro-enterostomy does not relieve these patients. The operation of duodeno-jejunostomy was first done for this condition by Stavely,[17] in 1910, with complete success, and similarly good results from this procedure have been since reported by the Kelloggs.[7]

Conclusions.

Duodenal occlusion from compression of the third portion of the duodenum by the mesentery and its contained vessels is a definite clinical entity.

This condition is not infrequent in instances of visceroptosis, owing to increased drag on the mesentery.

Arteriomesenteric occlusion of the duodenum brings about a dilatation of the duodenum proximal to the compressed point, and is followed by a train of characteristic symptoms, the most prominent being persistent or recurring vomiting and epigastric pain.

The probability of chronic duodenal occlusion should be suspected in every thin, visceroptotic individual complaining of chronic "indigestion" with nausea and vomiting. The diagnosis is confirmed by competent X-ray examination after a barium meal, with appreciation of the fact that the degree of occlusion and dilatation of the duodenum may vary in the same individual at different times.

Postural treatment with increase of body weight (deposition of fat in the peritoneal tissues) brings about complete relief of this malady in almost all cases. In an occasional instance a properly performed duodeno-jejunostomy is indicated and is also followed by most satisfactory results.

Professional Building.

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METABOLIC EMBOLISM, REPORT OF A CASE.*

By J. N. UPSHUR, M. D., Richmond, Va.

Mrs. B. age 46. Previous history: Reared in an orphan asylum, which she left at 18 years of age. No serious disease prior to fatal illness. Was attended by the writer while in the asylum. Was lost sight of for two or three years after leaving the asylum. When called to see her, she had been several months in bed, examination revealed a large abscess in the left side of the pelvis. Went to hospital for operation, but under the influence of hot douches and tampons of ichthyol and glycerine, the abscess ruptured, and she made a complete recovery. For several years she only had transient indispositions. At rare intervals had slight endometritis. Was married at twenty,

*Read by title at the fifty-fourth annual meeting of the Medical Society of Virginia in Roanoke, October 16-19, 1923.

but continued the immoral life which she had previously led. The abscess previously mentioned was from gonorrheal infection. With one of her paramours she continued her association up to the time of her death. For several years, he was the subject of locomotor ataxia. She was a large woman, weighing 245 lbs. She consulted the writer April 19th. She had slight menorrhagia, which was controlled after five applications of a twenty-five per cent solution of argyrol. On the morning of April 24th, at 2 A. M., she was awakened by an acute abdominal pain; the writer was called at 9 A. M. and saw her an hour later. She was lying on her back, abdomen distended, tender and tympanitic, persistent nausea, and bowels relaxed. Gave a hypodermic of morpria gr. ¼ and atropine 1/150. Was seen at 2 P. M. at which time pain had centered in the lower right quadrant of the abdomen and all of the cardinal symptoms of appendicitis were present. Was seen at 3 P. M. by Dr. Bryan in consultation, who agreed with the writer as to diagnosis and the immediately critical condition demanding prompt surgical interference. She was removed to Grace Hospital, and at operation the following condition found as reported by Dr. Bryan. "The leucocytes were 13,000, no urinalysis was made. The abdomen was tender and rigid throughout, particularly in the lower quadrants, temperature 103, pulse 90. General anaesthetic, ether, drop method, administered by Dr. Willis, assisted by Dr. Creekmur. We decided upon the right rectus, which was generously made on account of the large amount of subcutaneous fat. The peritoneal cavity was cautiously entered and there was an immediate flow of serous bearing flakes of lymph, almost purulent but with no odour. Those intestines presenting proved to be on eviceration the loops of the small intestine, some four or five feet above the ileocecal valve. They were intensely red, strawberry colored, with innumerable small patechial hemorrhagic spots so closely put together that the whole presented red color, and congestion extended likewise in the mesentery which was elongated, thickened and greatly edematous, almost brawny, with bluish-grayish spots here and there which would indicate a possible breaking down. The condition stopped rather abruptly at about five feet from the caput proximally and likewise only a few inches from the caput distally; the omentum had apparently become attached to this large distended edematous loop and was violently red and inflamed, there being here and there hemorrhagic cysts, one or two of which were the size of a robin's egg each. There were likewise multiple subperitoneal fibroids over the fundus of the uterus, probably fifteen or more, none of them larger than a malaga grape and many the size of a small hazel nut. The appendix was located with considerable difficulty due to the short colonic mesentery and was found to be bound down by adhesions. It was fibrous, atrophic, hard and small and we did not attempt to remove it. Investigation of the upper abdominal cavity showed the gall bladder and liver to be normal and there were no evidences of a duodenal ulcer. The right and left kidneys were not palpated, but there was a distinct thickness and heaviness of the head of the pancreas, but I do not know that this has any particular bearing on the case. A large rubber catheter was placed in the pelvis about Douglas' cul-de-sac and twenty ounces of saline solution injected with a large syringe into the peritoneal cavity for attenuation of the peritoneal fluid and a spiral cut rubber tube bearing a strip of iodoform gauze was placed deep in the pelvis and brought out at the lower angle of the wound. Tissues were brought together in layers with catgut No. 2, silkworm gut, through the skin. Duration of the operation 50 minutes.

"*Remarks*: I believe the case to be one of thrombosis of the mesenteric vessels and more pronounced evidences of the terminal stage would have been gangrene of the loop to which we above referred. It may be that our operation was of some benefit as gangrene is not always a sequel of hemorrhagic infarct. We did not consider the pathology sufficient for resection. She took up three quarts of water that night by proctoclysis, her temperature next morning was 101, her kidneys acting well and her condition more favorable than during the operation."

April 27, 1923. Her condition was so grave that a secondary operation was deemed necessary, as giving her the only chance for life. "The old silkwom gut sutures were cut and removed, tissues were easily broken through with the finger, the peritoneal cavity readily entered. There was a considerable amount of seropurulent exudate which by gravity found its way to the pelvis, also considerable plastic

lymph, organized exudate binding the intestines together. The small intestines are greatly ballooned, their walls thickened and red, no attempt was made for an extensive investigation of the periotoneal cavity and organs, and one of the large distended loops of the small intestine was brought into the wound, catgut approximating the peritoneum and deeper layers, the skin was then sewn together with silkworm gut with this large loop hanging well out from the abdomen; purse string suture was then put about the free border of the gut, puncture made, considerable gas and fluid escaping, and a large fenestrated rubber tube shoved into the proximal loop some four or five inches, purse string suture pulled together to hold the tube in place, vaseline put over the intestine and about the wound, copious dressings. It is evidently a paresis throughout, the character of the peritoneal exudate indicates a severe state of septic peritonitis, and the prognosis, of course, is most grave."

She died early the morning of April 28th.

Remarks.—It is very singular that, with the extensive pathologic condition in her abdomen, she had no symptom of digestive disturbance and, on the morning prior to her seizure, she was at my office and expressed herself as "feeling fine." There was never any reason in this case for a Wassermann, but her well known immoral life and the locomotor ataxia of her paramour (who has since her death also died) and conditions found at operation give strong suggestion that syphilitic infection was causative of her trouble.

In the VIRGINIA MEDICAL MONTHLY for April, 1923, Dr. Stuart McGuire reports two cases in a paper read at the fifty-third meeting of the Medical Society of Virginia. In neither of his cases was a diagnosis made prior to operation; in one of his cases seven feet, four inches of the bowel was removed, in the other case four feet, six inches; both of these cases recovered. The success in these cases is a tribute to Dr. McGuire's good surgical judgment and operative skill. In the discussion, Dr. Horsley emphasized the importance of the removal of a sufficient amount of bowel, saying that he had lost a case he thought from failure to do this. It was emphasized that agonizing abdominal pain with symptoms of shock are very significant symptoms. In the case reported in this paper, there was intense pain, temperature 103 F., but no evidence of shock. Dr. McGuire emphasizes the fact that the mortality in these cases (92.5 per cent) should be largely reduced by early recognition and prompt operation. But the symptoms so closely resemble those of fulminant appendicitis, that a differential diagnosis is rendered difficult. The urgency of a prompt operation is emphasized in either case. At the same meeting of the State Medical Society Dr. Tankersley, of Greensboro, N. C., reported three cases. His cases occurred following operation. The first case, five days after operation for appendicitis, the second, "somewhat similar," six days after operation for appendicitis developed acute pain in the right iliac, profound shock, subnormal temperature, pulse rapid and weak, breathing fast and shallow, and died promptly. The third case developed after operation for subacute appendicitis, from which she had suffered for a year. She developed nine days after operation hiccough, rise in temperature, severe pain in abdomen, general, fecal vomiting. Twenty c.m. of intestine was resected; patient died twelve hours later. These papers referred to may be read with profit, as to discussion of pathology and treatment. Some five hundred cases have been reported, and these undoubtedly represent but a small proportion of the actual number. (James F. Mitchell, article March 1923, *Loose Leaf Medicine*, vol. V. pgs. 597-8). C. B. Parker, of Toronto, says in an article, 1922. "When considering the etiology of this condition in the main, the causes of the obstruction of the mesenteric obstruction are embolism, thrombosis, sclerosis of the arterial wall, or a combination of the two, while venous obstruction is more complicated, and occurs almost invariably as thrombosis, although retrograde embolism has been described." He also says, "that thrombosis occurs in the liver or gall bladder, or pancreas, as a result of inflammation," and then he adds, "intravascular clotting may occur apart from sepsis and is apt to occur after operations in which veins are transfixed, as for example, suturing the omentum. In addition to these more common causes, there are many others recorded, such as thrombosis commencing in strangulated hernia, ulcers of the intestine, intussusception, abscess of the mesenteric glands, breaking down carcinoma, phlebitis of the lower extremities, prostatic abscesses, cirrhosis of the liver." Parker also says, "the prognosis depends on the length of intestine implicated

as the primary consideration; the length of time since the onset, and condition of the patient are of less importance. Nine cases of spontaneous recovery, well authenticated, are on record, twenty-five cases of successful resection, one of these being his own case. Treatment should include operation as promptly as possible, delivery of the affected bowel outside the abdominal wall, shock combated by all known means, interstitial infusion of salines, warm applications to the abdomen; if intestine be markedly distended, it should be emptied. Enough intestine must be removed to insure sufficient blood supply to the remaining intestine. If the upper part of the small intestine is required, axial union is the best."

Leo Brady of Baltimore says, writing in January, 1923, "Of five hundred cases reported, there were only thirty-five recoveries." He reports fourteen cases from the Johns Hopkins Hospital records, in three of which there were no infarctions and thrombosis was only discovered on autopsy. The bibliography listed gives further discussion on this subject.

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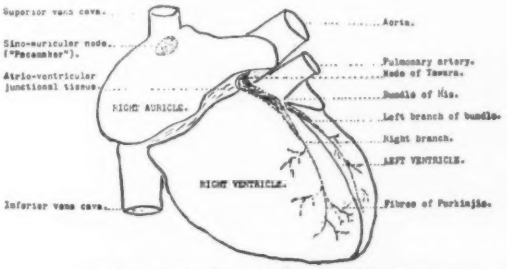
HEART BLOCK.*

By J. MORRISON HUTCHESON, M. D., Richmond, Virginia.

Clinical heart block was first described in 1875 by Galabin, who reported a case in which the auricle and ventricle contracted at different rates. This conclusion was drawn from auscultatory findings and tracings from the heart's apex. In 1899, His published polygraphic curves showing the same condition and suggested that it was due to a lesion of the auriculo-ventricular bundle. Hay, in 1905, recorded finding changes in the auriculo-ventricular bundle postmortem in a case that showed block during life. Thus the condition known as heart block became associated exclusively with diseases affecting the bundle of His.

Since the advent of more exact methods of tracing the contraction impulse, our knowledge of disorders of conduction has advanced rapidly, and the term heart block must now include not only the various grades of block in the bundle, but also certain disturbances which arise elsewhere in the course of the excitation wave as it passes through the heart chambers.



—The conduction system of the heart showing in shadow diagram the approximate relation of the more recently discovered structures to familiar anatomic divisions of the heart (after Smith).

Plate I.

It will be remembered that the contraction wave starts in the sino-auricular node, spreads through the walls of the auricle and reaches the auriculo-ventricular bundle by which it is transmitted to the ventricles. The bundle divides into two main branches which supply the right and left ventricles and these in turn subdivide and spread or arborize through the ventricular walls (Plate 1). Any interference, therefore, with the orderly passage of the impulse from its origin to its destination may be properly termed heart block. It is to be remembered, however, that the whole conduction system is under the influence of the vagus

*Read at the fifty-fourth annual meeting of the Medical Society of Virginia in Roanoke, October 16-19, 1923.

and that vagal stimulation may at times cause varieties of block which closely resemble those produced by the structural changes of disease.

By special methods of investigation several varieties of block may be readily recognized, and these have been classified according to the location in the conduction system at which they occur. Thus we may distinguish sino-auricular block of varying degree due to poor transmission in the bundle of His; bundle branch block where conduction is faulty in the right or left branch; and arborization block in which the defect lies in one or more small branches of the arborization system. The last two types are included under the term intra-ventricular block. Experimentally, these disorders may be produced in healthy hearts by injury to the conduction pathways at certain points and at times by stimulation of the vagus. Heart disease, however, rarely attacks isolated areas, so, when defective conduction is found in the human subject, it is usually to be looked upon as one manifestation of widespread cardiac disease involving other structures besides the conduction system. Investigation, therefore, of the several types of block

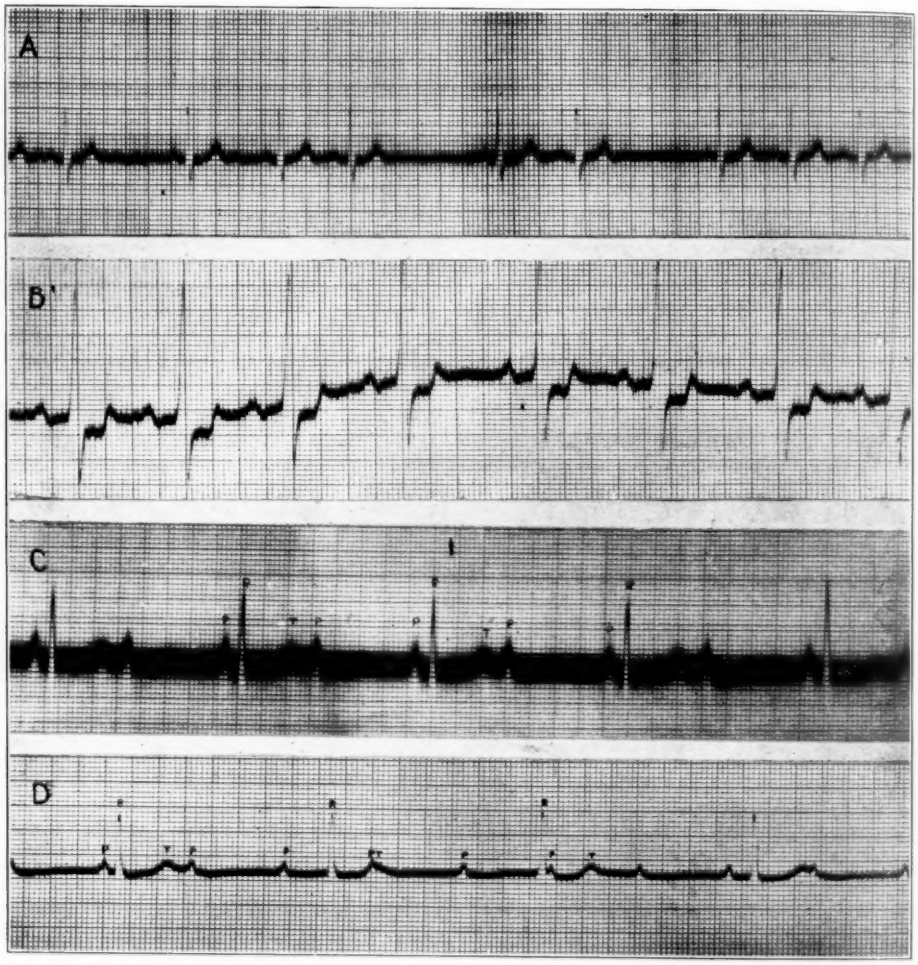


Plate 2.

Fig. A: Sino-auricular block. Irregularity of the whole heart with pauses equal approximately to two normal intervals. Fig. B: Prolonged conduction time resulting from Digitalis. P-R interval exceeds .2 second. Fig. C: Partial (2:1) block. The ventricle responds to every other auricular contraction. Fig. D: Complete block. Auricles and ventricles contracting at regular independent rates.

yields information of value not only as to what the heart is doing but also as to the nature and extent of the disease with which it is affected.

Sino-auricular block is a rare disorder probably always due to extra-cardiac causes acting through the vagus. It often occurs in neurotic individuals, and may be produced by digitalis and caused to disappear by atropine. It manifests itself by sudden changes in the contraction rate of the whole heart producing intervals between beats equal approximately to two normal intervals. So far as cardiac efficiency is concerned, sino-auricular block is of no significance. Its recognition is, however, important at times, for it may easily be confused with partial block of the bundle, a condition of different significance. The record shown here (Plate 2, Fig. A) is from a neurotic individual of thirty-four who complained of palpitation and showed an irregular pulse but in whom no other sign of cardiac derangement was demonstrable.

Auriculo-ventricular block, or A-V block, as it is commonly called, is due to impaired conduction in the bundle of His. It may be the result of syphilitic or rheumatic infection or other chronic degenerative processes where actual tissue change is demonstrable in the bundle, or it may occur as a temporary affair in acute infections or from digitalis. There is a prevalent idea that syphilis is the chief cause, but this is not borne out by the facts. White found syphilis in sixteen of 156 cases, while Willius, in an analysis of twenty-two cases of complete auriculo-ventricular dissociation found none syphilitic.

Auriculo-ventricular block may be partial or complete. Experimentally, the several grades may be produced by exerting varying degrees of pressure on the bundle grasped in a forcep. The mildest form is that in which there is delay in impulse transmission from auricle to ventricle. This defect can rarely be made out by clinical means, yet it is suggested when the first sound is reduplicated or, in cases of mitral stenosis, when the murmur or thrill or both occur in early diastole (Plate 2, Fig. B). When the block in the auriculo-ventricular bundle is more pronounced the ventricle fails to respond to certain impulses, causing either an occasional dropped beat or a succession of them. Commonly there is a ventricular response to every other auricular beat giving rise to what is known as two to one block. The latter condition usually shows a pulse rate of from forty to fifty per minute, and upon exercise this rate at times doubles abruptly. Plate 2, Fig. C, showing a two to one block was taken from an elderly patient with arteriosclerosis, who later showed a complete block.

When conduction from auricle to ventricle is completely obstructed the ventricle assumes its own rate which is as a rule abnormally slow (Plate 2, Fig. D). Nearly all patients who show a ventricular rate of thirty-five or less have complete block. On auscultation the first and second sounds are heard as usual, but often there is a third sound, the auricular contraction, which may occur at any point during diastole or fall with the first or second sound altering their character somewhat. In cases of mitral stenosis, this third sound may be accompanied by a murmur. Pulsations may also be seen in the jugulars corresponding to auricular beats and exceeding the ventricular rate.

Auriculo-ventricular block, by reason of the abnormal slowing of the heart rate, is at times accompanied by attacks of unconsciousness known as the Stokes-Adams syndrome. These occur, however, in the minority of cases, and as a rule the block itself and the resulting slow rate produce no symptoms. The illustration, Plate 2, Fig. D, was taken from a case of rheumatic heart disease with mitral stenosis, complete A-V block and Stokes-Adams attacks. Auricular contractions were plainly heard between ventricular beats and were followed by a distinct murmur.

Except in the transient forms due to toxic agents or to acute infections, auriculo-ventricular block is of grave significance. When persistent, it is always to be regarded as evidence of disease, not limited to the bundle, but affecting the entire myocardium. The recognition of A-V block is therefore of vast importance, as it may be the only sign of severe myocardial damage. Notable exceptions have been recorded, but as a rule chronic high-grade block of the bundle means death in a few years from general heart failure.

In the treatment of patients who show incomplete A-V block, digitalis is theoretically contraindicated on the ground that it may cause complete dissociation. Digitalis does usually increase the grade of block, but this effect is in itself comparatively harmless and cannot be weighed against the good to be derived from the use of the drug to improve

cardiac efficiency. Where the block is already complete, digitalis cannot affect it further and may be given when heart failure demands it. In cases due to toxic agents, atropine will often cause the block to disappear. For the relief of attacks of Stokes-Adams syndrome, adrenalin has proved of value. Where syphilis is a possible factor, antiluetic treatment is indicated, but instances in which the block has disappeared as a result of antiluetic therapy are rare indeed.

Intraventricular block or defective conduction beyond the bundle has been the subject of considerable discussion in the past few years. It appears to be more frequent than auriculoventricular block and, according to several observers, is of graver prognostic import, indicating severe myocardial damage with extremely high mortality. In those cases in which autopsies have been made, advanced sclerosis of the coronary arteries and extensive myocardial fibrosis have usually been found. Willius, in an analysis of 112 patients, in whom intraventricular block was found, reported a mortality of 69.6%, the average duration of life from the time of examination being 8½ months.

The electrocardiograph distinguishes two types of intraventricular block: bundle branch block where one of the main branches is affected, and arborization block where one or more small branches in the arborization system are involved. Patients with this condition usually show symptoms and obvious signs of heart failure, but occasionally the electrocardiagram furnishes the only evidence available. Even in the absence of symptoms, an electrocardiogram of this character should demand the greatest caution, especially as regards physical or mental strain. It is probable that many of the unexpected deaths following surgical operations occur in patients having this type of heart. Plate three illustrates the electrocardiographic findings in a case of right bundle branch block. This patient had survived what seemed to be a coronary thrombosis, and when seen showed an enlarged heart with broken compensation. On digitalis, compensation was restored, but the bundle branch block persists. Plate four shows arborization block in an individual with no symptoms except vague precordial pains; no cardiac enlargement, murmurs, or signs of vascular degeneration were made out. Sudden death occurred two months after the record was taken.

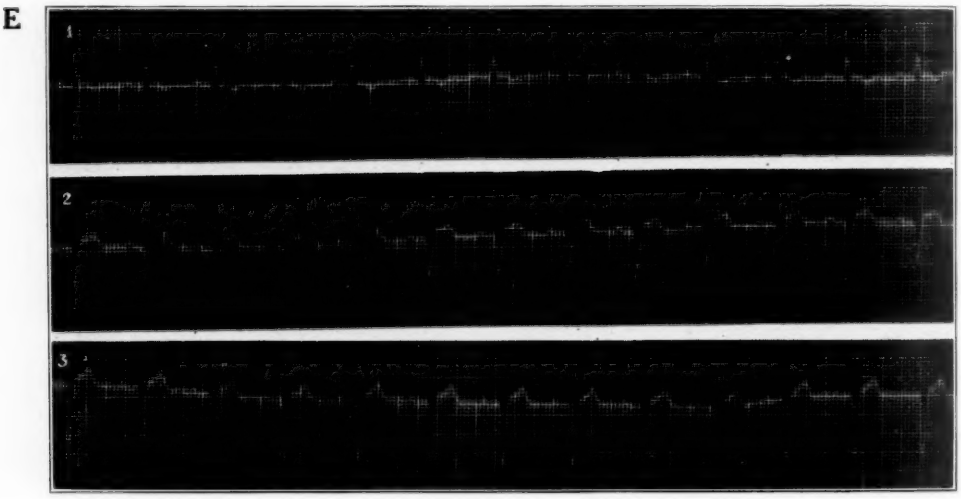


Plate 3.
Right bundle branch block. QRS complex abnormally wide (.12 sec.) inverted in leads II and III with high wide T wave in opposite direction.

Unfortunately, not all types of heart block can be identified by ordinary clinical methods of examination, but a familiarity with what has been learned from electrocardiographic and other studies is an invaluable aid to those who seek to know all that can be known about a possibly diseased heart. With a clear understanding of normal cardiac conduction and of the defects known to occur in disease, one may,

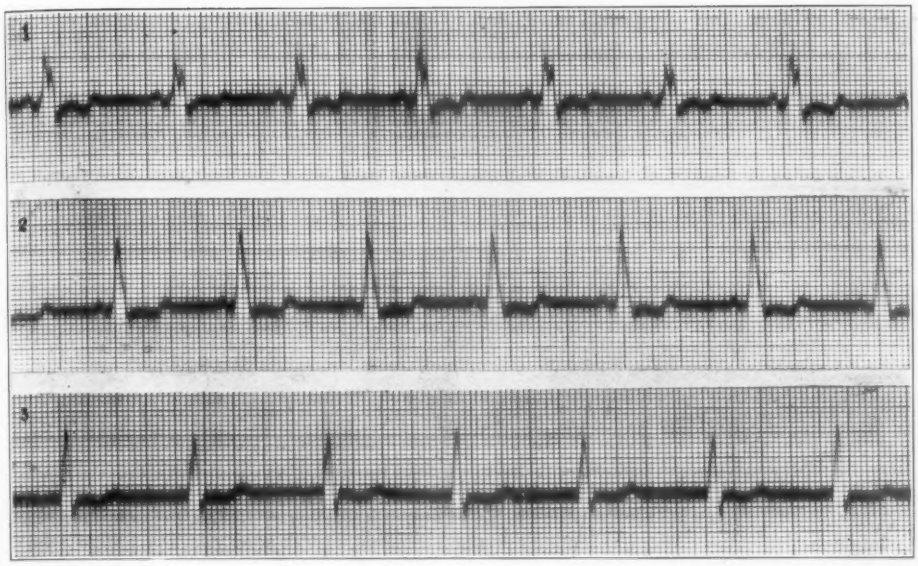


Plate 4.
Arborization block. R wave notched and abnormally wide (.14 sec.) in all leads.

by diligent application of the unaided senses, detect or at least suspect the several types of block with a surprising degree of accuracy.

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CRANIAL INJURIES.

Hemorrhage and Economic Prognosis.*

By GEORGE TULLY VAUGHAN, M. D., LL. D., F. A. C. S., Washington, D. C.

A great surgeon has said that no injury to the head is so slight as to be ignored or so serious as to be regarded as hopeless.

For example, a boy 18 years old was struck a light blow on the head with a broom-stick. In less than an hour unconsciousness and spasms of the extremities came on. At the operation no injury to the skull was found, but extensive intracranial hemorrhage, which caused the death of the patient in a few hours.

On the other hand, a workman blasting had a tamping iron about one inch in diameter at the large end and tapering to about one-fourth of an inch at the small end and over four feet in length, driven entirely through his brain and survived the injury fifteen years. The specimens, tamping iron and patient's skull, can be seen in the Harvard Medical Museum.

The injury may be an abrasion, a contusion, or open wound affecting the scalp alone, or it may go further and involve the bone or the brain itself.

Just as in the abdominal or thoracic cavities the viscera may be ruptured without damage of the containing walls, so in the cranium, the brain and its blood-vessels may be ruptured without fracture of the skull. Conversely, fractures of the skull may occur without brain

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injury, but as a rule fractures of the skull mean injury to the cranial contents.

The varieties are as to region, those of the vault and those of the base. As to exposure to the air, shape, size, etc., simple or closed, compound or open, linear, stellate, depressed, complete and incomplete, local or limited; as general or bursting.

Fractures of the base are recognized also according to the fossa affected—each being characterized by a superlative: Fractures of the anterior fossa are least fatal; of the middle fossa, most frequent; of the posterior fossa, most fatal.

Naturally the importance of fracture depends on the injury to the brain, blood-vessels and nerves, and one of the commonest of these conditions is hemorrhage.

Traumatic intracranial hemorrhage comes from the blood-vessels between the skull and dura mater, from those on the surface of the brain, or from those within the brain substance. Usually the cause is a fracture or diastasis of one or more of the cranial bones, but sometimes vessels are lacerated and at the same time the skull escapes fracture. The symptoms are caused chiefly by compression from the effused blood or clot and come on rapidly according to the size and situation of the clot, in the form of unconsciousness, spasms, paralysis, vomiting, headache, somnolence, slow pulse, special eye symptoms, and changes in blood and cerebrospinal fluid pressure and contents. In many cases there is a *silent* or *free interval*, a name given to that period of time which elapses between the receipt of the injury and the onset of serious symptoms from pressure by the effused blood.

The blow on the head may stun the patient and cause headache and nausea, but he may go on about his business apparently normal for hours, days, or weeks, before the collection of blood which is gradually increasing reaches sufficient size to produce marked symptoms of compression. It is during this silent interval that many sad mistakes in diagnosis have been made; as the patient feeling nauseated and dizzy may have taken an alcoholic stimulant and, walking with uncertain gait, is taken up and put to bed in a station house or elsewhere without medical attention, charged with intoxication, and some hours later he is found dead from intracranial hemorrhage. According to Connell, the silent interval varies from a few minutes to six or eight weeks—the average seems to be about 24 hours.

When the signs of compression, headache, vomiting, spasms, or paralysis, slow pulse, somnolence, perhaps unconsciousness, come on, the skull should be opened where the focal symptoms indicate the lesion, preferably by an osteoplastic flap of large size. The flap is replaced after the operation and leaves no defect in the skull.

For bleeding from the bone, sometimes a troublesome complication, I have been using for many years a piece of soft tissue, muscle or fascia, cut from any convenient part of the wound, and pressed or rubbed on the bleeding surface until it sticks.

From an economic standpoint, the prognosis in wounds of the head (cranium) is important, as the earning capacity is diminished in many on account of headache, paralysis, or epilepsy. T. Crisp English (*London Lancet*, Feb. 20, 1904), as a result of the investigation of 300 cases of head injuries from one to twelve years after the injuries had been inflicted, concluded that from 20 to 40 per cent had their wage-earning capacity reduced or destroyed, especially if their work were intellectual in character.

L. B. Rawling, (*Br. Jorunal of Surgery*, July, 1922) wrote letters to 1,000 patients who had received gunshot wounds of the head during the World War. Of 452 replies up to 1920, 30 per cent claimed complete disability, 26 per cent doing a little work, and only 43 per cent doing ordinary work. The conditions causing disability were headache 89 per cent, giddiness 77 per cent, nerves 68 per cent, paralysis 29 per cent, and fits 25 per cent.

The following history of a patient with intracranial hemorrhage is selected from a number of such cases as illustrating many points of interest.

A. J. H.: white; 51 years old; salesman; was hurt in an automobile accident July 25, 1922, receiving a scalp wound about three inches long in the *left* occipital region. He was not unconscious but had symptoms of concussion—vomiting, dizziness, and headache. He continued going about attending to his business for five weeks, taking long trips by rail or automobile, suffering somewhat at times with headache and weakness, but otherwise seemed normal. At the end of five weeks the headache and weakness had increased. There

was mental dullness and somnolence so that he took to his bed. During the next three weeks these symptoms continued to increase, except the headache of which he no longer complained, to a condition of complete apathy. There had been no fever but a subnormal temperature (97-98), pulse had been slow (60 or less), no change in eye grounds on ophthalmoscopic examination and spinal puncture and X-ray of skull were negative.

I first saw him September 28, lying in bed apparently asleep. Shaking him caused him to open his eyes, but he would not speak and at once dropped back into somnolence. Pulse 60, involuntary and unnoticed evacuations from bowels and bladder, reflexes exaggerated and leucocytes, 14,000. Pupils slightly dilated but reacted to light.

The diagnosis was compression of the brain from abscess, blood, cyst, or tumor. Owing to the long time, eight weeks, which had elapsed and the subnormal temperature since the injury, it was thought probable an abscess existed. The location of the lesion was impossible and, as there were no focal symptoms, it was decided that it must be in a silent area of the brain, and as these areas are more numerous on the right side of the brain, it was thought best to expose as large a portion as possible of the *right* hemisphere, although the injury received had been on the *left* side of the skull.

Seen at twelve o'clock that night after transfer to hospital, the patient was comatose, pulse 110, temperature 101, and he was in a profuse sweat.

Next morning, September 29, 1922, the pulse was less rapid, the coma not so deep, and the nurse reported having observed slight twitching of the *left* foot. This was encouraging to the decision already made to expose the *right* side of the brain, so a large osteoplastic flap, 5½ by 4½ inches, was turned down on the right side of the skull exposing the larger part of the right hemisphere covered by a blue and pulseless dura mater. On turning down the dura, a large clot of blood was found beneath the arachnoid, extending from the extreme front of the frontal lobe back to the occipital lobe and down to the base, causing a deep indentation into the cerebral tissue, like the bed of a large tumor. On removal of the clot no pulsation at first was seen in the brain, but in a short time feeble pulsation was noticed. No bleeding point was found. The dura and the osteoplastic flap were sutured in place without drainage.

On awaking from the anesthetic, the patient talked rationally, recognized persons and called for a urinal when needed. There was no complication attending the patient's recovery and he was discharged from the hospital October 26, 1922. When last heard from in July, 1923, he was apparently perfectly well and attending to his business as usual.

The following points in this history may be emphasized:

1. Hemorrhage without fracture.
2. Hemorrhage on the opposite side to that receiving the blow.
3. The long silent interval, five weeks, during which the blood was escaping and accumulating on the surface of the brain.
4. The difficulty in locating the lesion in the brain as there were no focal symptoms such as spasm, paralysis, choked disk or aphasia.
5. Effect on earning capacity. There seems to be no deterioration in this respect and no complication so far.

1718 *I Street, Northwest.*

THE RELATION OF FOCAL INFECTION IN THE PRODUCTION OF OCULAR DISEASE.*

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This paper is written not to bring forth anything that is original nor to refute anything which has been written. Its sole purpose is to set forth the facts concerning a group of cases of various ocular conditions, all of which have had as their cause some focal infection which could not be located except by careful examination and in two of which, numbers nine and thirteen, the signs were so misleading that it was only the insistence of the ophthalmologist which led to operation and the preservation of vision.

As will be seen, the ocular conditions are variable in type and have no definite connection with the site of the underlying cause, very similar changes resulting from sinus, tooth and tonsillar infections.

If any one thing is impressed upon us by the facts here related, it would seem to be that the human body is an entity and not a group of independent parts, and that trouble in one organ is frequently the result of disease elsewhere in the individual, and can be found only

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after painstaking search, and that the physician must not become so highly specialized that he regards the organ of his particular interest as isolated.

So recent is our knowledge of the relation of sinuses and teeth to the ocular structures that it seems probable that in several of these cases the cause would not have been discovered had they occurred fifteen years ago and the vision, if not the eyes, would probably have been lost. Several would have been attributed to syphilis, as many to tuberculosis, and the rest distributed among the mysterious causes then assigned for such happenings.

Case 1. Miss E. B. S., age twenty-one, was seen on March 4, 1922, complaining of blurred vision of each eye. Examination showed no changes in any structure of either eye. O. D. V. was 5/10, the best corrected vision being 5/9 plus; O. S. V. 5/8 partly, capable of correction to 5/6. Examination of the visual fields showed normal peripheral limits with a relative central color scotoma, the diagnosis being retro-bulbar neuritis. Physical examination showed a rather low blood pressure, 100—65, hemoglobin sixty-eight per cent, reds 3,250,000 and whites 5,000. Wassermann weakly positive, but no other findings. Examination of the teeth showed them in good condition. The tonsils had been removed and the sinuses were reported as healthy. Vision not improving under iodids, another rhinologist, Dr. Ross Hall Skillern, was asked to see the patient and he felt that there was enough sphenoidal infection to account for the trouble. The sphenoids were drained and in six weeks vision was 5/5 plus in each eye.

Case 2. Mrs. W. L. H., age forty-two, first seen in 1906 and at intervals since then for refraction. On December 1, 1922, came complaining of a blur before O. D. Central and peripheral vision were normal and there were no fundus changes. Three days later central vision had fallen to 5/8 and there was a central relative scotoma for red and green. A diagnosis of retro-bulbar neuritis was made. Examination showed a hyperplastic sphenoiditis of the right side, treatment of which caused a disappearance of the ocular symptoms. At no time were there fundus changes.

Case 3. Mrs. P. E. D., age thirty-five, first seen in October, 1914, for refraction. On July 13, 1922, came complaining of blurring of vision of O. S. for the preceding ten days, during which time she had had a cold. The right eye was normal in all respects; the left eye showed no changes save for a central vision of 5/15 with a central relative scotoma for red and green. A diagnosis of retro-bulbar neuritis was made and examination showed involvement of the right sphenoid, which was opened. By August 9, 1922, the scotoma had disappeared and central vision was 5/5 plus.

Case 4. Mr. A. H., age thirty-nine, seen first December 27, 1915, for refraction. On April 26, 1921, he reported complaining of blurred vision of O . S. Examination showed O. D. normal in all respects. O. S. V. was 5/15 with a crescentric patch of retinal edema at the macula. Wassermann was negative as were the nasal passages and throat. Three teeth were found to have apical abscesses, extraction on May 10, 1921, resulted in a subsidence of the retinal edema with a return to normal vision by June 10, 1921.

Case 5. Mrs. E. T. L., age sixty, reported on July 19, 1920, with a history that O. S. had been sore since the preceding day. Examination showed O. D. normal with a vision of 6/10. O. S. slight ciliary injection with two posterior synechia and a vision of 6/15. Examination showed normal urine, negative Wassermann, two teeth with apical abscesses and an involvement of the ethmoid cells. The teeth were extracted and the ethmoiditis treated by suction, the patient however not objecting to more radical procedure. This attack cleared up but two months later O. D. was involved. In January, 1921, the left eye was again involved which lasted, with short intermissions, until August of that year when the left antrum and the ethmoid were cleaned out, with an almost immediate improvement in the ocular condition, and without return up to the present. Corrected vision is normal and, except for a few pigment spots on the anterior capsule of the lens, the eye is undamaged. One of the interesting things about this case was a sensitization to atropin after a long period of use and the necessity of using scopolamine; also interesting was the long dilatation of the pupil without increase in ocular tension in a woman of sixty.

Case 6. Mr. B. H., age twenty-five, first seen March 13, 1917, with a history that O. D. had been inflamed four years previously, with some recurrence at times. O. S. had been sore the previous week. O. D. was normal in all respects with a vision of 6/5. O. S. showed intense ciliary injection, with a cloudy cornea,

the pupil filled with exudate and a slight hypopyon: vision being perception of hand motions at one foot. The eye had been under indifferent treatment. Under suitable local and general measures, conditions improved so that in four days the exudate in the pupil was absorbed and vision was 6/25. The Wassermann was negative, the teeth were in good condition but the sphenoids were infected. On April 27, 1917, a hemorrhagic retinitis developed in O. S. which treatment quieted, the nasal treatment consisting in the use of the suction apparatus. In June the right iris became inflamed, but the attack was light. In August, 1918, O. S. was again involved, the iris being so congested that there was hemorrhage from it, into the anterior chamber, leeches being required to lessen the iritic hyperemia; a similar attack occurred three months later. In December, 1919, a retro-bulbar neuritis with central scotoma and some edema of the disc appeared in O. D., vision falling to 6/30 to return to 6/5. Radical operation has been refused though he has had several ocular inflammatory attacks, each aborted by nasal treatment.

Case 7. Mrs. E. S. S., age thirty, seen first June 30, 1921, with a severe irido-cyclitis of O. S., O. D. being normal in all respects with a vision of 5/5. O. S. had a vision of 5/60. Local treatment was prescribed and nasal examination by Dr. Seth A. Brumm showed the left nasal cavity in bad condition, with the ethmoid probably involved, and X-ray examination by Dr. George E. Pfahler showed a cloudy ethmoid. Operation confirmed these findings with almost immediate improvement. By July 15, 1921, two weeks after the first visit, the eye was white and vision normal.

Case 8. Mrs. A. H. C., age thirty, was first seen Febuary 15, 1915, for refraction. On December 7, 1915, she again reported, this time with an inflamed right eye, which went on to a severe irido-cyclitis with much K. P. and iris engorgement. Physical examination including a Wassermann was negative, but nasal examination showed a septum deflected to the right with acute infection of the ethmoid and sphenoid cells. They were treated and by December 27, 1915, the eye was white. On August 1, 1919, there was another outbreak in the same eye and again intra-nasal interference was required, with prompt relief, the eye being clear in two weeks. A third attack started December 19, 1922, with much congestion of the iris and chemosis of the conjunctiva. Pus was obtained on opening the ethmoids and by January 2 the eye was again almost white, with normal vision.

Case 9. Mrs. C. C., age thirty-three, was first seen on February 3, 1923, with a right eye which had been sore for about twelve hours. There was considerable corneal haze, and ciliary and iritic congestion, the vision being 5/10. O. S. was quiet with a vision of 5/5. Teeth, Wassermann and general physical examination were negative. She was seen by three rhinolaryngologists all of whom said the sinuses were negative but the tonsils were badly infected. Following an expression of infectious material from the tonsils, the eye greatly improved, seeming positively to point to the source of infection. The tonsils were removed February 9, 1923, and the eye became worse, the pupil filled with exudate, cornea densely hazed and the conjunctiva so greatly chemosed that it over-hung the limbus; vision at this time was scant light perception. In addition to the other local remedies, leeches were applied to the temples with no great relief. On February 14 there was a small hypopyon. Consultation was again held with the laryngologist, Dr. Ross Hall Skillern, who could still find nothing to suggest sinus involvement. The eye continued in its severely inflamed state and on February 18 the writer insisted on amputation of the right middle turbinate, which was done by Dr. Skillern the following day, when there was found in the sphenoid a thin blood-tinged serous fluid. In forty-eight hours the improvement in the eye was most remarkable, the cornea being clear enough to see that the vitreous was quite hazy; in three days more the vitreous was clear enough to see that the disc and retina were quite edematous. Improvement however continued and in four weeks from the nasal operation, corrected central vision was normal.

Case 10. Mr. N. W. B., age twenty-six, first reported on August 1, 1922, complaining of blurred vision of O. S. for the preceding twelve days, without pain or other symptoms. O. D. V. was 5/5 and this eye was normal, O. S. V. was 5/25 without external changes. The vitreous was quite hazy and there was a large patch of exudative choroiditis to the nasal side of the disc and about twice its size. It was believed to be either syphilitic or tubercular. Specific infection was denied and a blood Wassermann was negative, physical examination

was negative and tuberculin injections gave no reaction; the teeth were in good condition. Nasal examination showed that the sphenoids and posterior ethmoids were the site of a low grade inflammatory process and they were drained on August 24, 1922. By September 5, 1922, vision was 5/10 and by September 29 the vitreous was quite clear, vision was 5/5 and the choroidal patch quiet.

Case 11. Dr. E. B. K., age twenty-seven, had been refracted first ten years ago. On January 30, 1923, he reported that O. S. was tender and that there had been some photophobia. Examination showed some slowness of pupil activity but no other changes. On February 2 there was some congestion and the following day some K. P. as well as a linear infiltrate into the lower portion of the cornea. Blood and urine were negative, Von Pirquet negative, Wassermann negative, sinuses negative, one apical abscess at root of lower left second molar tooth, cultures from tonsils showed streptococcus viridans and staphylococcus aureus. The tooth was extracted and the tonsils treated, cultures from the tooth showing streptococcus viridans. On February 12 the eye was distinctly better and went on to complete recovery by February 28.

Case 12. Miss E. B. V., age seventeen, was first seen on October 27, 1922, with blurred vision of O. D., which had then lasted for two weeks. No other symptoms. O. D. V. was 5/35 with a large central scotoma, the disc was hyperemic with some blurring of the temporal margin. O. S. V. 5/5, the eye being normal. Wassermann and Von Pirquet tests negative. sinuses, blood, urine and teeth negative, but the tonsils were badly infected, and were immediately removed. On November 4, O. D. V. was 5/15, the disc still being swollen with a complete macular wheel. By November 24, O. D. V. was 5/5 and the fundus was normal except for slight hyperemia of the disc and one or two "spokes" remaining of the macular change; central color vision was normal.

Case 13. Mrs. M. B. W., age fifty-two, seen on January 3, 1917, complaining of blurred vision of O. D. with pain in the right frontal region following influenza. O. D. V. was limited to counting fingers at two feet, the direct pupil response was abolished but consensual reaction was good, a condition which was reversed in the left eye. The right disc was hyperemic with blurring of the margins. The left eye had normal vision, full field and no changes except the loss of consensual pupil activity. Dr. George B. Wood could find no signs of sinus involvement and X-ray examination by Dr. H. K. Pancoast was negative, but so plain did the underlying cause seem to be that the sphenoids were opened on the writer's insistence on January 28, 1917. Almost at once an improvement in vision was noticed and, by February 2, 1917, vision of O. D. was 6/20 and one week later corrected vision of this eye was 6/6.

These cases may be divided into three groups according to the site of the original focus, or into types of ocular involvement in which case four groups will result, and it has seemed well to select this second classification. We then have group one where there was an acute uveitis of greater or less intensity to which six of the cases belong; five resulting from sphenoidal or ethmoidal involvement and one from a tooth root abscess; group two, of retrobulbar neuritis with four cases all due to sphenoidal involvement; group three, with two cases of retino-choroiditis, one due to sphenoidal hyperplasia and the other to a tooth root abscess, and one case of neuro-retinitis with tonsillar infection as the cause.

From this analysis we see that there is no definite connection between the site of the original infection and the type of the ocular inflammation and that a diagnosis of the ocular disease will not *per se* enable us to locate the original infection, but a complete physical examination is the only reliable method of procedure. It will be realized from a study of the cases in group two that at times this type closely simulates the result of tobacco-alcohol amblyopia and may be very difficult to differentiate from that condition. It seems quite probable that some of the tobacco cases, in which in spite of the cessation of the use of the toxic agents the visual defect persisted, were also affected by unrecognized sinus involvement and therefore naturally were not cured by the removal of the influence of the tobacco and alcohol.

As to the method of the production of this type of neuritis by sinus disease, two views are held, one that it is an actual neuritis due to the seeping through the thin bony wall of the sphenoids of toxic material from the sinuses, and the other that it results mechanically from pressure on the nerve. Of these theories the former seems to the writer to be the more probable.

The course of transmission is either by continuity of tissue involvement, through the lymphatic or through the blood stream.

Retro-bulbar neuritis from sphenoid or ethmoid involvement is an example of the first method. uveitis from sphenoidal infection of the second, and neuro-retinitis from infected tonsils of the third.

The most important item of the treatment after the source of the infection has been localized is its radical removal. Palliative treatment by vacuum or suction apparatus is, in the writer's experience, useless and to be avoided unless there is a very definite contra-indication to more radical proceedings. Nothing but good has followed the opening of the sinuses in any case which the writer has seen and he believes that in case of doubt this should be done.

When we come to consider the proportion of these various groups which are caused by focal infection we find no reliable figures. Formerly we believed that the greater number of cases of irido-cyclitis were due to syphilis, tuberculosis, gonorrhea or rheumatism, now it seems that at least one-half of the cases of this condition or of uveitis are due to localized infection, and this estimate is probably too low, and we now know that there is no such entity as "rheumatism."

Retro-bulbar neuritis was "tobacco-alcohol amblyopia" or from some similar toxemia; of this condition it would seem that at least two-thirds the cases are from sinus disease, and many of the remainder are complications of disseminated sclerosis.

Retino-choroiditis is still probably most frequently due to syphilis or tuberculosis and only in an occasional instance does it result from focal infection as in Case No. 10 of this series.

The two needs which it is hoped this paper has shown are first a prompt and complete physical examination, and second as thorough a removal of the cause as is possible.

1530 *Locust Street.*

FACTORS IN THE DIAGNOSIS OF PULMONARY TUBERCULOSIS.*

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Clinical tuberculosis may develop in only two ways. These are, once infection takes place, through the renewal of activity of latent foci which have existed for variable lengths of time, or through the uninterrupted progression of foci from the time of infection to the cropping out of symptoms.

While there is no tuberculosis without tubercle bacilli, these cannot do harm unless one is predisposed to the disease. Naegli in 1900 published a report of five hundred autopsies. Seventy-one per cent showed pathological changes due to tuberculosis. Among individuals under eighteen, only twenty-five per cent showed lesions, but in persons above eighteen years of age the proportion that showed traces of infection reached ninety-eight per cent. Other pathologists have since confirmed Naegli's findings. It is rare to find an adult who does not show some skin reaction to tuberculin, irrespective of his economic or social condition. While it is known that where there is most poverty, tuberculosis is more often found, it must not be assumed that it is confined to those of the poorer class. An investigation of the number of patients in private sanatoria who can pay more than $50.00 per week for treatment is convincing. The nature of predisposition is a complex affair, and may be due to physiological and anatomical factors, but it is most certain that environment, a wrong living plan, whether adopted by the poor or rich, plays the greatest role.

What is chiefly aimed at in practice is discovering tuberculous disease. The patient is interested in the results of tuberculous infection and whether any special line of treatment is necessary to improve his health. This information can only be given after a careful inquiry into the patient's history and symptoms and a consideration of the physical signs elicited by an examination of his chest and other parts of his body, with routine laboratory examinations, and the X-ray when necessary and available. A hasty diagnosis of a suspected lesion is as hazardous as neglect to recognize active disease.

While tuberculousis is not hereditary, it is a fact that several members of a family are often affected, either because they all have been subject to similar environmental influences, or from massive infection during infancy and childhood. It rarely occurs in consorts or those exposed to the disease in later life. While tuberculosis itself is not hereditary, a weakened re-

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sistance to this disease may be transmitted hereditarily.

General symptomatology in doubtful cases is of more significaice than indefinite physical signs. There is no active tuberculosis without constitutional symptoms. Pottenger has classified the symptoms of tuberculosis into three groups: (1) Those due to toxemia (malaise, lack of endurance, lack of strength, nerve instability, diminished digestive activity, increased metabolic rate, loss of weight, tachycardia, night sweats, fever, leukocytosis): (2) Reflex causes (hoarseness, tickling in larynx, cough, digestive disturbances, loss of weight, chest and shoulder pains, flushing of face): and (3) Those due to the process *per se* (hemoptysis, sputum, frequent and protracted "colds," and pleurisy). It is evident that, if there are multiple symptoms from the toxemia, a rather extensive or virulent early process exists. Symptoms from reflex causes and the process *per se* may occur in an early or a late process. From all symptoms mentioned in general, lack of endurance, loss of weight, nerve instability, lack of appetite, rapid pulse, and fever are the most constant manifestations. These are the physiological effects of tuberculin when injected.

The signs of early tuberculosis are not those of consolidation or increased density, but of irritation and toxemia. Cabot states, "In the earlier stages of incipient tuberculosis there may be no recognizable physical signs. The earliest physical signs are fine crackling rales." Osler says, "Feeble breath sounds are the most frequent characteristic early signs. The expiration is usually prolonged." If the numerous foci of miliary tuberculosis cannot be discovered in their early stages by auscultation, percussion, or radiography, it is not logical to believe that it is possible to detect the incipient lesion by auscultation and percussion before granular breathing or rales have made their appearance.

Inspection may lead to a strong suspicion of tuberculosis, but an opinion should never be given by simply looking at a patient, for many who appear strong are suffering from tuberculosis. A dilated pupil, flushed cheeks, lagging or limited movement of one side of the thorax, unilateral atrophy of breasts or muscles of thorax, axillary sweating, displaced apex heart beat, supra- and infra-clavicular depressions, drooping shoulder, prominent scapula, deformity of spine, curved finger nails, and clubbing of fingers must be observed, but the absence of all these is not conclusive of the absence of tuberculosis. Palpation may detect rigidity of the muscles of the neck and thorax, apex impulse of heart, thrill, or increase and decrease in tactile fremitus, enlarged cervical, supra-clavicular and axillary glands. In percussion a light stroke should first be used, beginning at the base of one side and percussing upward to detect small degrees of variation from the normal pitch. The interspaces of the two sides should be compared, bearing in mind the normal anatomical differences in the note. The diaphragmatic excursion and Kronig's isthmus may be obtained by tidal percussion and compared on the two sides. An increase in retrosternal dulness at the borders of the heart may be approximated. Resistance offered to the plexímeter finger is often of more value than an attempt to hear an impaired note. The axilla should never be omitted. It must be remembered that hyperresonance is often present over extensive pathology.

As in percussion, auscultation should begin at the pulmonary bases and go upward. With quiet breathing, variations from the normal should be noted, comparing the two sides. Feebleness or roughness of respiratory murmur, granular breathing, rales, pleural friction, prolongation of expiration, tubular breathing, increased whispered voice, cog-wheel or wavy breathing, cardiorespiratory murmur, should be charted with the blood pressure reading and the character of heart sounds.

Each patient should be taught how to expire and cough and, if rales were present with breathing before cough, it should be noted whether they disappear or are provoked by cough. Rales which disappear during examination are usually of no significance. To be of significance, rales must be strictly localized over a limited area and persistent but, when present, whether basal or apical, their existence should be explained. In minimal cases, not over one per cent show rales except after cough. In moderately advanced cases from fifty per cent to seventy-five per cent, and in far advanced cases from forty per cent to fifty per cent show rales only after cough. Therefore, the value of the expiratory cough in diagnosis cannot be over-estimated.

Pottenger has given the most logical expla-

nation of the small heart in tuberculosis—that it results from defective filling of the chambers of the heart on account of impaired breathing. During a year's experience in routine repeated blood pressure readings in incipient cases of tuberculosis at Catawba Sanatorium, I did not find hypotension a feature of diagnostic value.

Laboratory examination of the sputum, if there is any, using concentrated methods, is of inestimable value. However, in the average sanatorium where repeated examinations are made, tubercle bacilli are not found in more than sixty per cent of the cases (far advanced, moderately advanced, and minimal cases). Routine blood examination may show a mild leukocytosis or a leukopenia with diminished hemoglobin, and often relative increase of lymphocytes.

Even where pulmonary lesions are definite, radiography by a skilled radiologist in conjunction with a thorough clinical examination will give a much more comprehensive and complete idea of the case, both as to diagnosis and prognosis, than is possible from physical examination alone.

That too little effort is being made by the medical profession to make an early diagnosis of pulmonary lesions is realized by a study of the annual reports of the Virginia State Tuberculosis Sanatoria. These reports show that more than fifty-five per cent of the cases admitted for treatment are suffering from far advanced disease—and this does not include cases rejected because too far advanced for admittance.

Medical Arts Building.

SPASMUS NUTANS.*

By ALEX. F. ROBERTSON, Jr., Staunton, Va.

We have chosen spasmus nutans as our subject on account of its rarity and good prognosis. While this is a well recognized condition among pediatricians, it is not often encountered or generally known by the internist. Not uncommonly these little paitents are carried from clinic to clinic, and run the gamut of a complete neurologic examination including lumbar puncture and spinal fluid examination before a diagnosis is made.

Spasmus nutans or nodding spasm is a functional nervous affection seen in infants usually between the sixth and twelfth months of age, and limited to the first two years of life. It is slightly more common in boys.

The onset is always in the winter months between November and March. There seems to be a definite relation to dentition, although some authorities think this merely coincidental.

Etiology. A slight rickets is nearly always present. Most authorities claim that it is invariably associated with rickets. The theory that it is due to poor lighting of the nursery is not generally considered tenable. The hypothesis has been advanced that this affection is brought about by slow myelization of the nerve fibers of the central nervous system. There have been no autopsy findings to prove or disprove this theory.

Prognosis. The prognosis is conceded by all to be good. Still, from whose work we have obtained the best description which we have been able to find of this condition, says the prognosis is 100% good. Epilepsy and idiocy do not follow. A few of these children later in life are nervous and eccentric, but this is not the rule. It has occurred to us that their attacks of spasmus nutans in infancy are merely early manifestations of a nervous or neurotic tendency. Recovery may occur in two or three months, and is usually complete by the end of the second year. After apparent recovery, this condition may temporarily recur in moments of excitement.

Symptoms. *First*: rhythmic movements of the head, which may be anteroposterior, lateral rotation, or a combination of the two. These movements vary from twenty to one hundred and twenty a minute, and come in cycles, with widely varying intervals of quiet between, and are usually absent when the child's attention is fixed. They occur only when the head is held erect. *Second*: nystagmus. Nystagmus usually accompanies the nodding, and often has a unilateral predominance, or may appear only in one eye. Its appearance in infants, in the absence of other neurological signs, and without impairment of vision, is sufficient evidence upon which to base our diagnosis. The nystagmus may precede the head-shaking by weeks or months: rarely it may be absent.

Differential Diagnosis. This condition must be distinguished from congenital nystagmus, reflex nystagmus, voluntary head-rolling of infants, and infantile epilepsy.

Congenital nystagmus may be due to blind-

*Read at the meeting of the Medical Association of the Valley of Virginia in Winchester, May 31, 1923.

ness from any cause, to errors of refraction, or to organic disease of the central nervous system, especially hydrocephalus. These conditions may be ruled out by careful neurological and ophthalmoscopic examinations.

Reflex nystagmus is usually associated with intestinal disturbances or acute infectious diseases, which are not present in true spasmus nutans. Proper treatment of these conditions causes prompt disappearance of the eye symptoms.

Voluntary head-rolling of infants is a coarser movement, usually taking the form of deep bowing, and is easily differentiated.

Infantile epilepsy is usually associated with spasms of the trunk as well, and these movements are present only during attacks.

Treatment. When associated with malnutrition or rickets, proper measures should be taken to improve the nutrition of the infant, this being accomplished chiefly by proper adaptation of the food and improvement of hygiene, if this is defective. Codliver oil is useful in combating a rachitic tendency.

Report of Case.

P. C., six and one-half months old, was the third child of healthy parents. He was born at full term after normal delivery, and weighed nine and one-half pounds. He was circumcised under ether anaesthesia when ten days old. He was breast fed entirely for several weeks, after which time complemental feeding with modified cow's milk was instituted. A few weeks later he was weaned on account of failure of the mother's milk. The food always agreed with him well, and he gained regularly in weight without suffering from any intestinal disorder or disease of any kind. At the age of six and one-half months, on March 8th, the mother noticed nystagmus of the left eye, which was followed several days later by a less intense nystagmus of the right eye. On March 22, a rotary movement of the head developed. All of this took place without any digestive upset or other symptoms.

Physical Examination. The infant was quite large, well nourished and developed, and appeared bright and happy. He seemed to be interested in his surroundings, grasped for objects and appeared mentally normal. The fontanelles were neither bulging nor depressed, and the head-chest ratio was normal. Pupils were equal and reacted to light. There was a rapid lateral nystagmus of both eyes, more pronounced in the left, and of a rate of about eighty to the minute. This sign disappeared when a finger or bright object was brought within a few inches of the infant's eyes, fixing his attention. There was a rotary movement of the head of rather wide excursion and varying in rate from forty to eighty to the minute. This movement was suspended when the child reached for a toy or concentrated on a near object. There was no rigidity of the neck. The tongue was clean: the throat normal. The heart and lungs were normal. There was no rosary. Abdominal examination was negative. There was a slight bowing of the legs. Reflexes were not increased. Temperature and pulse were normal, and the weight was 22 lbs. 4 oz. Examination of the eyes was made by Doctors Fisher and Henkel, March 15, with the following findings: The child had nystagmus. Examination of the fundus showed no pathology. Apparently the muscle balance of the eye was normal as far as could be ascertained. No measurement of the refraction was made.

Treatment. The infant was being fed on a proper diet consisting of modified cow's milk, cereal, vegetable soup, and orange juice. As this food was well assimilated and there had been no symptoms of indigestion and the increase in weight had been steady, it was considered entirely suitable, and no change was made in the diet. Although it was our impression that this case was not associated with rickets, yet, on account of the bowing of the legs, codliver oil has been given. No bromides or other drugs have been used.

Progress. Examination May 19th showed no change in the infant's condition, except that the rotary movements of the head were much less extensive in their excursion, and the rate of movements was about sixty to the minute.

Conclusions.

1. Spasmus nutans is a condition which is easily recognized if the cardinal signs, nodding and nystagmus (together with the absence of all other signs and symptoms) are borne in mind.

2. A prompt recognition of this condition will save much unnecessary anxiety on the part of the parents, and embarrassment on the part of the internist.

Discussion.

Dr. Chas. E. Conrad, Harrisonburg: I agree with Dr. Robertson that the diagnosis of this condition is a great relief to the parents. I recently had a case which I saw first when the child was three months of age. It was then a feeding case. The weight was nine pounds. I saw it again at eight months,

when it weighed eighteen pounds. At eight months it showed decided rotary movements, nystagmus, and strabismus. Another interesting thing is that I found she showed some very marked indications of spasmophilia, well defined Chvostek and Trousseau signs. I gave her calcium bromide. I saw her again in two months and she showed no improvement. Since then I saw her about a month ago, eighteen months after the onset, and as far as could be seen the child was entirely well except for slight internal strabismus. The people, on account of another child in the family having a severe nervous condition, were very much disturbed. There was complete recovery except for slight internal strabismus as stated above. I gave calcium bromide and the child got along all right, but I do not know if it had any effect except on the spasmophilia. In this case there was no question of darkness as a cause, the rooms being well lighted.

FURTHER REPORT ON SPINAL ANESTHESIA*

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There are certain requirements which an anesthetic solution must fulfill in order to satisfy conservative surgical judgment, some of the most important of which are: 1. Complete loss of pain sense; 2. Relaxation of the abdominal muscles; 3. Reduction of shock to a minimum; 4. Disturbance of the cardio-renal organs as little as possible; 5. Allowance of sufficient time for careful operation; 6. Lessening of the post-operative morbidity; 7. Maintenance of the acid-base equilibrium of the blood as near normal as possible.

In advocating the use of spinal anesthesia, it is not claimed that it is a panacea for all anesthetic ills, but realizing the limitations of any form of anesthesia, it is claimed that it fulfills a very definite field in surgery. It is the purpose of this discussion to take up these seven factors, and as briefly as possible, to compare the results produced by the three most commonly used anesthetics; i. e., ether, gas-oxygen and spinal.

At the Lawrence Clinic, we have given one hundred and forty spinal anesthetics, with no mortality and with less than five per cent untoward reactions during operations, and none following them. Based on our own observation, as well as the literature, and seeing the results obtained by others, we believe it is as safe as either gas-oxygen or ether, if used judiciously. Unfortunately in the past, the reports of the surgical literature have given it an unsavory name, due not to the principle *per se*, but to the failure to acquaint oneself with the anatomy of the area to be anesthetized, together with the pharmacological action of the injected drug; also the various drugs used in the past have had a higher degree of toxicity than the solutions used at the present time. It is only on the reports of skilled operators, using it in a large series of cases, that an unbiased opinion can be formed as to its merits. Babcock reports over 6,000 successful anesthesias, Yount reports 7,000, Jonnesco has given 5,016, Chute something over 328, Labat reports over 200, and Smith of Boston has given 100. Including this and other reports there are over 18,000 spinal anesthesias reported, with only one death, that being before the solution was injected. What further corroborative evidence do we need to satisfy ourselves as to its non-toxicity? More careful study of the technique of giving it, as well as the desired action required, i. e., just where anesthesia is wanted, will in the future make this method of anesthesia more popular, with less reactions reported. There are many factors involved in the successful administration of a powerful drug in such a vital area, so its use should be confined to those who have carefully studied the method and can recognize any untoward reactions promptly, otherwise the literature will continue to report unsatisfactory results and condemn it without justification.

In this series, five per cent of the cases required a small amount of ether to divert their attention, so called "psychic ether," as other signs pointed to good anesthesia. In six cases, it was necessary to completely narcotize the patient, as the loss of pain was not obviated. This was in the first few given and we are glad to say that in the last fifty anesthetics given, there has been no complaint, showing that it is necessary to thoroughly acquaint oneself with the procedure before condemning it. There has not been any severe reactions in any case, such as is reported by certain authors. As a rule we give it and go on with the operation: rarely has it been necessary to administer any stimulant to offset an undue reaction. Some writers have criticized this procedure on the ground that the patient was made more nervous at being present at his own operation. This has been overemphasized, as it has been found that a hypodermic of morphine and scopolamine given one hour before the operation will relieve this anxiety and the patient

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is usually indifferent to any manipulation that he may receive.

Muscular relaxation with spinal anesthesia is all that one could desire, if the anesthetic is successfully administered, rarely requiring any retraction of the abdominal muscles, the abdominal wall can be literally lifted up and inspection made of the entire abdominal contents, lying quietly in a state of tonus, called by the French the "silent abdomen." This relaxation obviates trauma from retraction, which is an important factor in promoting rapid and uneventful healing. The intestines are in a state of tonus, rarely requiring packing off and extensive handling, with its resulting train of symptoms later recognized as ileus, tympanites, etc. Many prominent surgeons have said that they had never been able to get good relaxation with gas-oxygen, without giving ether with it; this has been the experience of the writer. Surgeons accustomed to spinal anesthesia, in the removal of adenomatous prostates, all declare that the relaxation and other features are much superior to gas-oxygen, its nearest rival in this particular work; with gas the anesthetist is urging the operator to get out, whereas with intra-dural anesthesia the operator can feel sure of an hour in which to do a careful dissection and leave the field dry. With the former the breathing is labored, the muscles are in a state of partial rigidity and the time element plays an important part in the operation. A very interesting point in this connection is the marked physiological action that pituitrin exhibits on the involuntary muscles of the gut, combined with spinal anesthesia. Recently, in a case of peritonitis resulting from ruptured appendix, operated on by one of us, the bowels had not moved in three days previous to entry in the hospital; on examination, no peristaltic movements were detected, the abdominal walls were tense and badly distended with gas. After the abdomen was opened, the patient was given one ampoule of pituitrin; in less than two minutes there were active peristaltic waves along the intestines, the patient passed much gas and fecal matter and, after being given another ampoule, more gas and fecal matter was passed and a large amount subsequent to operation. Patient left the table with the abdomen flat, and there was no vomiting later. It is a common occurrence for the patient to pass feces on the table and after returning to the room; this is a definite aid in these cases of ileus and other paralytic conditions of the bowels. It is to be recommended in cases of intestinal obstruction where no definite cause can be ascertained.

Crile, in his excellent work on "Shock" has shown that spinal anesthesia will prevent shock. He attributes shock to two conditions, where hemorrhage and other causes that do not ordinarily enter into the cause can be ruled out. It is a bombardment of the brain with nervous impulses, coming from two sources, the first a result of over-stimulation of the brain due to operative injury, the second a result of psychic disturbances coming from fear and other psychic influences. With ether the psychic factor can be obviated, but the operative injury is even more the cause of shock, while with nerve block, i. e., spinal anesthesia, all impulses from the field of operation are prevented from reaching the brain, and the psychic phase is controlled with morphine and scopolamine; this is "anoci-association par excellence." In this report it has frequently been observed that a patient will go through a major operation with no shock, shown by the pulse rate and other signs, even in procedures like a panhysterectomy, or a prostatectomy on a very aged man.

The urine is examined before, as well as after, operation to see what influence the anesthetic plays on the renal tissue, and it has been noted that in no case has any toxicity been noted following the operation, evidenced by casts, albumen, etc. McNider has shown the depressing influence that ether has on the renal tubules, with an increase in the stainable lipoid material in the collecting tubules, with a diminution in the phenolsulphthalein output, and an increase in the blood urea and creatinine. Cabot and others say that the toxic influence that novocaine exerts on the kidneys can be disregarded; this has been our experience. There is no class of patients whose cardio-renal organs needs as much rest, as the prostatic, so, if we can devise a method of giving the prostatic drainage, without undue work being thrown on the already diseased organs, it behooves us to do so, if the patient is to receive the best management. Uremia is one of the chief causes of death following this operation, due in a large measure to the added work thrown on the kidneys, so, if we can spare the patient this strain, it rests on the operator to do so.

Pneumonia following a general anesthetic is a complication in two per cent of all cases, quite a factor in increasing the death rate in post-operative conditions. With spinal anesthesia, there is here, just as there is with the kidneys, no extra strain on the lungs and, if the septic factor be eliminated, we should not have any complications in the lungs.

The duration of this method of anesthesia varies, depending on the weight of the patient, age, and disease, usually lasting from fifty to ninety minutes: as a rule, an hour can be safely relied on for complete anesthesia as high as the abdomen, and an extra ten or fifteen minutes in perineal work. The anesthesia resembles the tide somewhat, slowly diffusing upward to the highest point of the subarachnoid space, with less concentration at that point, then gradually receding, so that the upper level of anesthesia is of the shortest duration and the lower level has the longest duration, as well as the deepest anesthesia. In doing a major and minor operation, the perineal work can be done without discomfort, after the patient begins to complain of pain in the upper incision. Using spinal anesthesia for its nerve blocking value, it has been combined with ether in cases where it is not feasible to depend on it alone, to obtund the pain sense, in extensive traumatizing accidents.

The morbidity following the operation has been greatly lessened in our series: there have been very few cases with nausea or vomiting, very few cases having any unusual accumulation of gas requiring measures to relieve it. The patient can take fluids before, during and immediately after the operation, making it unnecessary to give fluids by the rectum, and under the breasts, where the body fluids are depleted. Only one case has had a severe enough headache to cause comment, lasting two days and requiring nothing but slight elevation of the head to relieve it. No other untoward symptom such as meningeal irritation, etc., has been seen in any case.

It has been shown that the hydrogen-ion concentration of the blood is seriously disarranged in ether narcosis, due doubtless to the toxic effect it exerts on the kidneys—a most important factor in maintaining the equilibrium of the blood plasma at a constant physiological level, necessary to insure a prompt and uneventful recovery. This is not disturbed in spinal anesthesia.

The oldest patient was eighty-one and the youngest six years old. As a rule children stand spinal anesthesia well, if not too neurotic in temperament. The toxicity of the injected solution is, in our opinion, the result of direct absorption and not the result of upward diffusion of the novocaine, as claimed by some writers for, if the latter were true, we would expect to get more paralyses, especially that of respiration, which has not been seen in any case. Smith of Boston, has shown that the sharp drop in arterial tension is a result of the splanchnic centers being paralyzed; the higher the drug diffuses, the more the blood pressure drops, so that this must be kept in mind in trying to get anesthesia above the costal margin; if the area of anesthesia reaches above this point, there is usually a sharp drop in blood pressure. Blood pressure readings are made every ten minutes throughout the operation and, as long as the patient breathes regularly and deeply, no significance is attached to a moderate drop in the tension. If there is any sign of air hunger or marked restlessness, the patient is promptly given ten minims of adrenalin subcutaneously, which usually causes a prompt reaction: good results have also been obtained with caffeine in four grain doses for this condition, though it is rarely seen. Just after the spinal puncture is made, the patient is given one c.c. of pituitrin, as it is believed to aid in stabilizing the arterial tension. Re-breathing, using a closed inhaler, is valuable in cases with respiratory distress, supplying additional carbon dioxide, which will stimulate the medullary center. The patient must be closely watched by some one to see that he breathes regularly, as at times he forgets to breathe. This point must be watched very closely.

The contra-indications to this method of anesthesia are: 1. Patients with marked hypotension in shock where the pulse is very weak; 2. In cases of general septicemia; 3. In neurotic prejudiced patients; 4. In marked deformed spinal column disease; 5. In fevers of indefinite origin; 6. In diseases interfering with respiration, such as tumors, etc.; 7. In very obese patients with short diaphragmatic breathing space; 8. The aged and debilitated should be given small doses.

The indications for this over other forms of anesthesia include: Diabetics requiring operations, in patients with renal impairment, in

lung complications such as tuberculosis, and in acute coryza, requiring emergency operations. It is well tolerated in cardiac cases with compensation, and is indicated in all amputations on the lower extremities. As has been said, all genito-urinary operative cases stand it well with the possible exception of kidney cases; experience shows that traction on the renal pedicle will as a rule cause pain, though I recently operated on a patient with nephroptosis under local anesthesia, with very little discomfort.

The extent of the upward diffusion of the drug, when injected into the subarachnoid space, depends on several factors, some of which are under our control, these being, first the space through which the solution is injected, second, the amount of pressure used to inject it, third the position of the patient after receiving the drug, fourth, the amount of spinal fluid withdrawn, and last, the dilution of the anesthetic. The factors which cannot be controlled are, the natural diffusibility of the anestheic solution, and the normal circulation of the spinal fluid, which is toward the periphery. These six things must be kept in mind in doing a spinal puncture as they are the controlling factors in keeping the blood pressure from dropping too much, as well as protecting the bulbar centers from the anesthetizing solution.

Various drugs have been used from time to time in this work, such as cocaine, tropococaine, apothesine, stovaine and novocaine. Our experience has been limited to the latter drug, as we believe it to be the least toxic. Novocaine hydrochlorid in minute crystal form is the drug of choice, and is put up in sealed ampoules in sterile crystals, of certain dosage; it has been found that ten and twelve centigram doses will satisfy all demands. Following the technique of Labat, somewhat, the dosage depends on the age and weight of the patient, a safe rule being to give one centigram for each ten pounds body weight. Adrenalin has not been used in conjunction with novocaine, as it causes a more marked drop in the blood pressure.

Briefly, the technique is as follows: One hour before the operation, the patient is given a quarter grain of morphine and one one-hundredth grain of scopolamine hypodermically and, by the time the patient enters the operating room, all nervousness is usually gone, and the patient is resting quietly. The patient is placed in a sitting position with the back bowed well forward, the head resting on the chest, the lower spinal region is sterilized with iodine, and the iliac crests are located. A line drawn between these points crosses the fourth lumbar process. From this landmark the space to be injected can be located and, using a flexible twenty gauge needle, the spinal puncture is made, after anesthetizing the skin with one per cent novcaine. The needle is introduced in a slightly upward direction; a slight give can be felt when it penetrates the dura. The obturator is now withdrawn, so that when the needle enters the canal, clear fluid will drop from the needle; enough fluid is collected to dissolve the novocaine crystals. Then from ten to twenty c.c. of fluid is collected and discarded, the amount depending on the height of anesthesia desired, as well as the spinal fluid pressure. The dissolved novocaine is drawn into a five c.c. glass syringe and, after connecting it to the needle, the drug is gently introduced into the subarachnoid space, injecting a small quantity, aspirating more fluid in the syringe, and in this manner gradually emptying the syringe. An important point in the technique at this juncture is to make sure the needle is properly placed in the canal, for, as has been said, in connecting the syringe, the position of the needle may be altered, and thus cause a failure to get anesthesia (by aspirating fluid into the syringe several times the proper position of the needle may be insured). After withdrawing the needle, the patient is placed in the recumbent position (or any position desired), and the head well supported on pillows. The Trendelenburg position may be used if desired, or the patient turned over, if an operation is to be done on the back. Anesthesia above the costal margin is less satisfactory, the danger increasing in proportion to the height desired above that point. It is the refinements of technique in administering spinal anesthesia that give the most satisfactory results and, to attempt to give it without acquainting oneself with the above enumerated factors is to spell disaster and condemn it without justification. It is not our intention to leave the impression that a particular anesthetist is necessary, as any surgeon can give it, if careful study is made of it and the fact kept in mind that a powerful drug is introduced into a vital area. If the modus operandi is not thoroughly understood, the patient is subjected to an un-

necessary danger and an otherwise valuable method of anesthesia is discredited.

RESUME.

1. Spinal anesthesia, while not a panacea for all anesthetic ills, is a valuable adjunct in surgery below the costal margin.

2. Careful study of the pharmacological action of the injected drug, as well as of the anatomy of the area where anesthesia is desired, will lessen the number of failures and prevent any unnecessary reactions.

3. It is the anesthetic of choice in genito-urinary surgery, with the possible exception of the kidney.

4. The morbidity is greatly lessened: very few patients have complained even of a headache following the operation and there is less distention and vomiting.

5. Patients who have taken spinal anesthesia are with one accord very enthusiastic over it.

6. It is easy to inject and, if carefully watched, one accustomed to give it rarely has any trouble at all.

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A CASE OF ACUTE MASTOIDITIS COMPLICATED BY FACIAL PARALYSIS. OPERATION. RECOVERY.*

By E. U. WALLERSTEIN, M D., Richmond, Va.

Mrs. Mary L., white, widow, age 53, was first seen on July 12, complaining of a discharging ear.

The past history is unimportant except that her general health was good and there had been no previous ear trouble.

The present illness began with a coryza five days ago. The right ear became painful, and increasingly so, until the drum spontaneously ruptured, producing a small amount of bloody discharge. This increased in amount and became purulent. Three days later the patient was first seen. At this time she had a discharging ear, tinnitus and impaired hearing. There was an absence of pain.

Examination revealed a medium sized, stellate perforation at the umbo and a moderate amount of discharge. The case was apparently one of simple otitis media. As there was sufficient drainage, no incision was made. The patient was instructed to irrigate the ear and instill mercurochrome 4%. Within a few days the drum picture began to clear and discharge diminished. However, slight purulent discharge continued and, two weeks after the first examination, the patient complained, that within the last two days her face had felt "stiff" and had become paralyzed on the right side.

There was now a complete right facial paralysis. All branches of the nerve supplying the facial musculature were involved. Neurologic examination of the other cranial nerves was negative. The patient had no pain, the mastoid was not tender to pressure and the drum picture was not that usually found in mastoiditis. The drum was incised at this time, in the attempt to provide freer drainage. X-ray examination showed a cloudy mastoid but no breaking down of the cells.

Within a few days sagging of the posterior-superior canal wall developed and the discharge increased in amount. The temperature remained constantly around 99.5 and the facial paralysis continued.

On July 30th, eighteen days after first examined, the patient was prepared for operation.

The laboratory findings at this time were: Wassermann, negative; Hemoglobin, 85%; W. B. C., 11,000; P. M. N., 83%; urinalysis, trace of albumin.

Operation was done under ether anesthesia. On opening the cortex, a pneumatic mastoid was found. The cell-lining mucosa was thickened, but there was no bone necrosis until a number of cells were reached about one-half inch from the mastoid tip along the posterior canal wall in close proximity to the course of the facial nerve. These cells were broken down and about one-fourth drachm of pus was

*Read before the Richmond Academy of Medicine and Surgery, October 9, 1923.

obtained. No direct connection could be demonstrated by the probe between these cells and the facial canal.

The antrum was located and freely exposed. On careful inspection of the antrum floor, no dehiscence or necrosis of the facial canal could be found. Culture of the pus from the mastoid cavity, obtained at operation, showed a pure culture of pneumococcus—type not determined.

The recovery from the paralysis was rapid. Within three days the patient could partially close the eye on the affected side. On smiling, the face was still pulled to the healthy side. Within ten days after operation the only evidence of a facial paralysis was a slight difference in the naso-labial folds of the two sides. This gradually disappeared, the hearing returned to normal, and the patient was discharged as cured thirty-four days after operation.

As to the underlying pathology: Due to the fact that recovery from the paralysis was so rapid and that there was no demonstrable dehiscence or necrosis of the facial canal wall, the paralysis was probably due to edema within the canal, which quickly subsided as soon as all infectious material was removed.

The case did not offer difficulty in diagnosis since the middle ear disease was present. However, at times there is difficulty in distinguishing Bell's palsy from facial paralysis of otitic origin. Cases are on record of paralysis due to ear involvement in which the drum picture was normal. The apoplectiform character of Bell's palsy usually serves to differentiate it from paralysis complicating otitis media. In the latter condition the onset is gradual.

Facial paralysis complicating acute otitis media is more common in children than in adults since a dehiscence of the facial canal is more frequently found in children.

The occurrence of facial paralysis in chronic otitis media is of dire significance as it points to such conditions as necrosis of the canal wall, cholesteatoma, involvement of the internal ear, brain abscess, or meningitis.

In acute otitis media, facial paralysis is a relative indication for operation; in chronic otitis media it is an absolute indication.

114 *North Fifth Street.*

THE SIGNIFICANCE OF THE EARLY UROLOGICAL LESIONS.*

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In this brief paper I will not attempt to give any new or heretofore unknown facts. Prompted by the frequency with which we see urological lesions that have progressed to an incurable or dangerous condition because these early symptoms appeared to be so trivial or transient that the true condition was overlooked, even though our improved laboratory methods and instruments of diagnosis probably enable us to make a more correct, positive and localized diagnosis than in any other branch of medicine or surgery of the internal organs: and because these far advanced urological lesions often present such a pitiful and hopeless condition, accompanied by such untold suffering, I will attempt to briefly consider a few of the more important early symptoms.

In studying for the cause of any urological symptom, the matter of first importance is to get a complete history and make a thorough and complete physical examination, especially looking for evidence of tuberculosis, syphilis and focal infection. Probably the most common symptom with which we have to deal is some derangement in the act of urination. Difficulty in the act may vary from a diminution in the size of the stream to a complete obstruction, either of which may come on gradually or suddenly, depending upon its cause, which is variable. We should first determine the presence or absence of stricture, and of a foreign body such as stone, then a rectal examination of the prostate noting any abnormality of its size, shape and consistency. Here it is well to remember that the encroachment on the sphincter is not always in direct proportion to the size of the gland and we may have a very definite prostatic obstruction without any marked palpable enlargement of the gland as determined rectally.

If we are unable to determine the cause thus far, then a cystoscopic examination is necessary to confirm or eliminate some inflammatory condition or polypus in the posterior urethra, or the presence of a vesical stone acting as a ball valve obstruction, or the enlargement of the prostate which could not be detected rectally.

*Read before the Southside Virginia Medical Association at Suffolk, March 14, 1922.

The cause for painful, burning urination may be local or from some constitutional condition which may cause some change in the chemical composition of the urine, such as the fevers and diabetes. Of the local causes may be mentioned obstruction, urethral or vesical calculi, inflammations of the urethra and bladder. Cystitis, except traumatic from instrumentation, catheterization, etc., is probably always secondary to infection elsewhere, and we should not be contented until we have found its origin either in the lower tract, the kidneys, or some focus outside.

Frequency may be due to an increased output as in diabetes, to nervous excitability or spinal lesions, to prostatic enlargement or new growth in the bladder, or it may be due to purely local conditions, such as urethral and vesical irritation. It is to be remembered that in the young adult frequency, first by day and later nocturnal, is often the first and only symptom of renal tuberculosis. For this reason we should always give the symptom of frequency a careful consideration and not be satisfied until we have utilized all known means to locate the cause early, when treatment can offer the best hope of relief.

Pyuria is probably one of the most frequent urological symptoms and at the same time one of most vital importance. We will exclude pyuria of acute urethritis, which with the other symptoms of acute inflammation is self-evident, and consider the more chronic types. When pus is found in the urine, much information can be had by the three glass tests which tells us whether the pus is coming from the anterior urethra, or from the prostate, or whether it comes from the posterior urethra and beyond. When this method fails to locate the source, a cystoscopic examination is called for. We may find the pus due to some obstruction in the urethra, causing back pressure with a secondary cystitis. It is not uncommon to find that a vesical calculus or diverticulum is present to cause a more or less permanent pyuria. Not being satisfied with the findings in the bladder, we must next investigate the ureters and kidneys. When pus or pus and blood is found coming from the ureters, we have just begun the examination and work from now on is to determine its cause. This we must do by examination of the pus to determine the type of infection, and by functional test to determine the degree of damage to the renal structures. When indicated there should be an X-ray examination of the kidneys and ureters, both before and after the injection of some opaque media, such as the silver preparation, or preferably sodium bromide solution, to determine the presence of a stone, a dilated or kinked ureter, a dilated pelvis, renal destruction, or new growth.

Hematuria, however slight or transient it may be, is a symptom that demands a thorough investigation to determine its source and cause. It arises from a great variety of causes and may come from any part of the genito-urinary tract. Clinically, hematuria may vary from microscopic blood to the proportion of a severe hemorrhage. If due to an inflammatory condition, it is characterized by pain and pus will be found in the urine. But often hematurias are unaccompanied by any degree of pain and these cases constitute a very important group because, being free from pain or having perhaps very slight and transient pain, they are not investigated as they should be. For example, the bleeding from a papilloma or a malignant disease of the bladder is often the first and only symptom of these lesions and intervals of months or even years may elapse between bleedings. The patient in the meantime has acquired a false sense of security, believing that he has been entirely relieved, only to find on the recurrence of hemorrhage that his disease has progressed from one which could have been relieved to that of an incurable condition.

By the two or three glass test we can tell whether the blood comes from the anterior urethra or beyond. When it is uniformly mixed with the urine, its source can only be detected by cystoscopic examination. Symptomless hematuria of either vesical or renal origin may be continuous or intermittent and, if on cystoscopic examination the source cannot be localized in the bladder, ureteral catheterization is called for and it must be remembered that renal hematuria can only be detected when it is active. If not bleeding at the time of the examination, then it is necessary to re-examine during its active stage.

In conclusion, always consider hematuria, however slight or transient, a serious condition until proven otherwise.

Remember that a symptomless pyuria may mean a chronic pyelitis which, if unrecog-

nized and untreated, may lead to a more serious condition—pyonephrosis—with complete destruction of the kidney and even, perhaps, its fellow of the opposite side.

REPORT OF CASE OF FRACTURE OF ELBOW FROM THROWING BALL.*

By CHAS. M. HAZEN, M. D., Richmond, Va.

The Academy may recall some radiograms of elbows previously shown in which satisfactory results of treatment eventuated in difficult cases.

In the present report the interesting feature is not so much the corrective procedure, but the etiology, which is somewhat unusual.

We are told in the text-books that "The humerus may be broken by direct or indirect violence, like the other long bones; but also the humerus is more frequently fractured by muscular action than any other bone of this class. It is usually the shaft, just below the insertion of the deltoid, which is broken."

I find in the *Journal of the American Medical Association*, May 23, 1918, reference to the *Progres Medical of Paris*, in which Dr. Senlecq reports a "Fracture of the Humerus from Throwing Hand-grenade," and the comment, "Since Phelip reported in 1916 a case of this kind, five similar ones have been encountered. The fracture is in healthy men as they throw the grenade by hand. The bone breaks obliquely into three overlapping pieces, as Senlecq shows by a radiogram. Vautrin's patient was an American soldier and the fracture occurred while he was playing ball. Consolidation was not complete until the end of the fourth month. In the other cases one month generally sufficed."

Nothing is said of the exact location of these fractures—of the shaft, of course—whether near elbow, or higher. It is remarkable if in all six cases there were three pieces.

In the case which I am reporting it is the internal condyle of the humerus which has suffered and we are dealing with an *elbow* injury, so classified for study and treatment. The damage is slight compared with that previously described, but not unlike what commonly happens from falling on the arm. The lateral radiogram reveals practically nothing, the anteroposterior shows fragmentation with some displacement. (The mechanism of the Jones' position will reduce this perfectly).

The points in the diagnosis, without the X-ray, of separation of the internal condyle are (Cotton): "Intact (passive) mechanism of the joint; lack of lateral play in the joint; local tenderness and swelling; thickening at a point near, usually below, the proper site of the epicondyle; sometimes a loose fragment can be made out; pain on active use or on passive stretching of the superficial flexors."

A word here as to the nomenclature and exact anatomy, quoting from Gray: "By some writers the external condyle is called the *external epicondyle* and the internal condyle the *internal epicondyle*." "The external epicondyle (*epicondylus lateralis*) is a small, tubercular eminence, less prominent than the internal, curved a little forward, and giving attachment to the external lateral ligament of the elbow-joint, and to a tendon common to the origin of some of the extensor and supinator muscles."

"The internal epicondyle (*epitrochlea* or *epicondylus medialis*), larger and more prominent, and therefore more liable to injury than the external, is directed a little backward; it gives attachment to the internal lateral ligament, to the *pronator radii teres*, and to a tendon common to the origin of some of the *flexors* of the forearm. The *ulnar nerve* runs in a groove at the back of the internal condyle."

The muscles which pull on the internal condyle produce flexion and pronation. The pronator radii teres arises chiefly from the tendon common to it and the flexors and the intervening fascia, as well as from the humerus just above the condyle and by a lesser head from the coronoid process of the ulna. The action of the pronator is to turn the forearm and palmar surface down.

The flexors arising from the internal condyle are the flexor carpi radialis, ulnaris, sublimis digitorum, and palmaris longus; the deeper muscles with the same functions arise from the bones and fascia below the elbow: they are the flexor profundus, longus pollicis and pronator quadratus.

Referring again to Cotton, "As a rule, the diagnosis is based upon the change in shape of the portion of bone left behind, with the disappearance of the 'hook,' and the changed relation of the ulnar nerve."

*Read before the Richmond Academy of Medicine and Surgery, June 5, 1923.

This author also concludes that, "The best guide to the success of reposition is palpation. Remember that the external condyle should lie a little higher than the internal and the olecranon only slightly behind the condyles. We may, while holding the fragments firmly, partly extend the arm to test the axis."

He also refers to the marked atrophy (presumably a late result) in the muscles arising from the internal condyle.

The patient in this case is an overgrown boy of 12 years and one would expect his rapid development of bone to favor such an injury. The ossification of the internal condyle begins at the fifth year, considerably earlier than the external, but union with the shaft is not so rapid and is affected at about the age of 18. These facts, and a study of the bodily movements involved in throwing, help to explain why this point should be the one to give way.

All of us have played baseball and a little reminiscence and experiment in the act of throwing, especially with the jerk used in pitching, will recall the strain which comes on the muscles attached to the internal condyle.

An analysis of the act discovers a series and combination of muscular activities, beginning in the legs and extending to body, shoulder, arm, fore-arm, hand and fingers. A similar aggregation occurs in boxing, in batting, and in the "follow-through" of golf.

The body swings forward on the feet, bends at hips with shoulders moving forward; body twists to side throwing shoulder across, arm swings from shoulder, elbow bends in flexion, forearm pronates, wrist bends flexing hand, fingers flex; ball is delivered.

It is apparent that this maneuver of the body as a whole is in essence flexion and pronation of all the parts which co-operate; it is also evident that the greatest strain, the result of the accumulated momentum of all the combined muscular action, will be felt by the snapper of the whip, which is the forearm and hand. Therefore, the point of greatest strain is the shaft and internal condyle of the humerus, from which arise flexors and pronators.

It may be noted in passing that most pitchers exhibit exaggerated movement, raising the foot high in front before throwing, "winding-up" with shoulders and arms, a lot of "body-English"; most of this is intended to deceive and disconcert the batter, to mask the direction and point of delivery, the rate of speed—like the ancient mask of the Japanese warrior, the stamp of the fencer's foot, the insulting jabber of the pugilist, the wearing remarks of the baseball coach.

The many pictures which are published of our national heroes will demonstrate the points of the argument that the internal condyle is a point which might be expected to be damaged by the musuclar act of throwing.

Summary.

Radiogram shows fracture—fragmentation of internal condyle of humerus due to throwing ball.

The mechanism of injury is explained as due to the pull on the attachments of flexors and pronator, not only by their own contraction but also as subjected to the whip-like effect of the whole movement of foot, knee, hip, the side-twist of body, the swing of shoulder, the bend of elbow, wrist, fingers.

Professional Building.

NASAL GANGLION NEURALGIA.*

By M. H. HOOD, M. D., Portsmouth, Va.

A deep feeling of profound regret, though born of a brief and local experience, that in the past, and to some extent at the present, patients with a neurosis of the nasal ganglion have been grossly neglected, and the wish to mimimize this number of sufferers, prompts the presentation of this subject.

The patients who suffer either the few or the many and varied symptoms of nasal ganglion neuralgia are not so numerous as are those who present themselves with the more common complaints or diseases, as errors in refraction, tonsillitis, etc., and yet it should be just as humanely important, as scientifically so, that these rather unusual conditions, when presented, should be recognized, diagnosed and the proper therapy applied or administered, as should be in the ones of more frequent occurrence. For several reasons these patients should be, by far, more interesting: (1) Because they are more or less unusual. (2) Because they bear, and plainly present, in a striking manner, the unmistakable ear marks, signs and evidences of uncompromising pain and suffering in their faces and countenances. (3) Because a great number of them are cases of long standing, some of which still endure their torture, without any imbalance of their nervous mechanism, while others who have suffered more intensely have apparently experienced at least a partial imbalance of their nerve forces and, as a result, are frequently referred to us with a so-called nervous breakdown, or as neurotics, neurasthenics, or as those who have been "hipped," etc. Often the patient will inform you that he has consulted every available physician and specialist, and in some cases even the chiropractors, with no result or relief whatever, and they are conscious of the fact that they are the bugbears, meddlers, triflers, pests and naggers of the medical profession. (4) Because when you make an accurate diagnosis in these cases, you must relieve the symptoms at least temporarily and, if treated properly, a favorable prognosis can usually be rendered.

Prior to 1908 the knowledge of rhinologists concerning the nasal ganglion might have been perfect to the letter, according to Gray, Piersol and other recognized texts on anatomy. But their interests and efforts to simplify and bring together both the anatomical facts and the principles of their physiology to the extent of identifying a singular or separate syndrome (a neurosis) of this ganglion, which might be amenable to treatment, other than excision of the ganglion itself, was utterly lacking. So far as I am informed, it was truly a branch of our speciality, the development of which was practically untouched. To those who grasped the possible idea, it was indeed a ripe and promising field for an unlimited amount of work, by all available talent. Since 1908 there has been more than a considerable amount of work done in this particular field; numerous articles have been written. It has been presented at the various medical societies and associations including city, county, state and national. It occupies a chapter in at least one book and the writer predicts that it will, in the near future, occupy its rightful place in the leading texts of our speciality. The author who has done more work and accomplished most in this special field is unquestionably Dr. Greenfield Sluder, Washington University Medical School, St. Louis, Mo., under whom it was my pleasure and privilege to take my post-graduate work in laryngology and rhinology and whose views I shall follow more or less closely in this paper.

Anatomy.

The sphenopalatine, sphenomaxillary Meckel's, or the nasal ganglion, is one of the four small ganglia associated with the extra-cranial portion of the fifth nerve. Each of these ganglia is a recipient of three roots: motor, sensory and sympathetic. Investigation by various authorities apparently justifies the conclusion that these ganglia are properly recorded as belonging to the sympathetic group. The nasal ganglion consists of an interlacement of nerve fibres; in each are embedded numerous stellate sympathetic neurons. It is a triangular reddish gray body about 5 mm. in length and situated high up in the sphenomaxillary fossa in close proximity with the sphenopalatine foramen, just beneath the maxillary branch of the trigeminal nerve, but for practical purposes, just posterior to, and immediately above the posterior tip of the middle turbinate, from one or two mm. to nine mm. beneath the surface of the nasal mucous membrane.

*Read at the meeting of the Virginia Society of Oto-Laryngology and Ophthalmology in Richmond, April 18, 1923.

Roots: The sensory root consists of the sphenopalatine nerves, also axons of the sympathetic ganglion cells, and dendrites of the cells of the gasserian ganglion. The motor root is the great superficial petrossal nerve, a branch from the facial, and may also carry sensory fibres. The sympathetic root, the great deep petrossal nerve, is a branch from the carotid plexus. The two great petrossal nerves fuse at the middle lacerated foramen to form the vidian nerve. The vidian nerve joins the nasal ganglion, beside giving off nasal branches, and a branch to the pharyngeal ostium of the eustachian orifice receives a filament from the otic ganglion.

Branches: The ascending or orbital branches supply the sphenoidal and posterior ethmoidal air cells and the periosteum of the orbit. The descending branches supply the mucous membrane of all but the anterior part of the inferior portion of the inferior turbinate bone, and adjoining portions of the middle and inferior meatuses, the hard palate and its mucous membrane, the inner side of the gum, and the mucous membrane of the soft palate and tonsil, motor filaments to the levator palati, and azygos uvulae muscles. The internal branches supply the mucous membrane of the posterior superior portion of the outer wall of the nasal fossa, the roof and septum of the nose and that portion of the hard palate which lies posterior to the incisor teeth. The posterior branches or pterygopalatine supplies the mucous membrane of the nasopharynx in the region of the fossa of Rösenmuller.

Anatomical Relations: Practically all authorities seem to agree that the nasal ganglion is situated high up in the sphenomaxillary fossa and a great many agree that it is in close proximity to, or close to the plane of the sphenopalatine foramen. It is also in close relation to the walls of the sphenoidal sinus, regardless of the variations in the boundaries of the sphenomaxillary fossa, or the irregularities of the sphenoidal air cells whether divided into one or more compartments, or prolonged downward and forward, or downward into the pterygoid process, and in some variations it is as closely associated to the walls of the posterior ethmoidal cell.

In its relation to the lateral wall of the nose the nasal ganglion may be found as superficially as one to two mm. or as deeply seated as nine mm. from the surface of the mucous membrane.

The nerves and ganglia which are and may be associated with the nasal ganglion should be the basis of possible explanation of referred pain in nasal ganglion neuralgia.

It is directly connected with the nerves in the greater portion of the mucous membrane of the nasal fossa, hard and soft palates and a great portion of the nasopharynx: also the mucous membrane of the post-ethmoidal and sphenoidal air cells, as well as the periosteum of the orbit through its descending internal and ascending branches, respectively. Hence, there is a possibility of pain referred through the ganglion to the root of the nose, hard and soft palates, nasopharynx, parietal eminence, occiput and orbit: also, the possibility of sympathetic manifestations or vasomotor secretory phenomenon in the nose, as in hay fever. It is directly connected with the maxillary nerve since its sensory roots are formed by the palatine branches from the maxillary. Hence, there is the possibility of referred pain being directed along the course of the second division of the fifth. It is directly connected with the vidian nerve through the fusion of its motor and sympathetic roots, the great superficial and deep petrossal nerves, which are branches of the facial nerve and carotid plexus, respectively. And in this manner it is also connected with the facial nerve and carotid plexus. The great deep petrossal nerve represents the association cord between the superior cervical sympathetic and the nasal ganglion. Anatomically, the fibres of the cervical sympathetic from the nasal ganglion pass downward by way of the vidian nerve and carotid plexus to the cervical sympathetic and give branches to the cervical nerves, and proceed finally to the lower cervical ganglion, which is in intimate connection and often fused with the first thoracic. These ganglia are in association, with, or often fused with the nerves, which in addition to supplying the neck, also make up the brachial plexus and supply the upper extremity.

From the evidence at hand, both anatomical and clinical, the following assumptions would seem possible and probably justifiable: (1) That neuralgic pain referred to the root of the nose, to the parietal eminence, to the orbit (deep seated) or along the upper jaw, is of nasal ganglion origin. (2) That the apparent

sympathetic syndrome or vasomotor secretory phenomenon of the nose, as occurs in hay fever, regardless of the season of the year, with the accompanying eye symptoms, originates in the sympathetic elements of the nasal ganglion. (3) That persistent itching of the hard palate, throat, or along the course of any nerve or ganglion with which the nasal ganglion may be associated, could originate in the nasal ganglion. (4) That neuralgic pain referred to the occiput, the neck, shoulders, upper extremities, breast, axilla or shoulder blade, is a vidian neuralgia originating in the sympathetic elements of the nasal ganglion, and that the path of the impulses is from the nasal ganglion through the vidian nerve, upper, middle and lower cervical, and first thoracic ganglia, through the last two of which pass the heart and lung fibres.

From a clinical and therapeutic standpoint we know that we can control many of the neuralgic pains about the eye where no pathology can be demonstrated, as blepharospasm, photophobia, and the like, by cocainization of the nasal ganglion and by means of the same procedure we also know that the symptoms which accompany many pathological processes of the eye, as iritis, corneal ulcer, keratitis, etc., can be controlled. Since the ophthalmic symptoms with or without demonstrable pathology, in reference to the nasal ganglion, are only clinical and therapeutic facts, there is no positive anatomical explanation, so far as I am aware, but a reasonable assumption seems to be that these are referred pains or vaso-motor secretory manifestations from the nasal ganglion, but by way of what branches these impulses travel, no one has thus far been able to determine. A more complete knowledge of the anatomy and physiology of this apparent nerve mechanism is wanting.

Symptomatology.

The symptoms occur in the form of syndromes, namely: The neuralgic, the sympathetic, or a combination of the two.

The Neuralgic Syndrome: Frequently the neuralgic symptoms appear following a mild, moderate or dreadful head cold or coryza. The pain begins usually at the root of the nose, in and about the eye, upper jaw and teeth, and sometimes the lower jaw and teeth are involved, and extends posteriorly along the temple, zygoma, about the ear including the mastoid process, with special emphasis of a tender spot just behind the mastoid process. Then it extends backward to the occiput, down the neck into the shoulder, and may continue throughout the upper extremity; or it may be directed to the shoulder, axilla or breast. The pain in the neuralgic syndrome seems to vary as to location, occurrence and severity. As to location, it may be present at any one or more, or even in all the anatomical regions, as mentioned above. As to occurrence, the attacks may occur day or night, without warning, and may last from a few minutes to hours, days, weeks, and in some cases it remains more or less constant. As to severity, in mild cases there may only be a sensation of tightness or drawing, or a sensation of the teeth being too long on the affected side, stuffy ears, aching throat, itching of the hard palate, stiffness or rheumatism of the neck and shoulders. In the more severe cases, the pain is described by patients as a ball of fire, a knife cutting, or a drill, drilling into some nerve; or like an electric current turned loose in the nose, eyes or head. This pain is excruciating and unbearable.

The Sympathetic Syndrome: This type apparently occurs with less frequency than the neuralgic syndrome. A history of the sympathetic syndrome coming on with, or following a coryza may or may not be obtainable. The most striking thing occurring in this syndrome is the vasomotor secretory phenomenon, which usually occurs in the following manner: During any season of the year, without any warning whatsoever, the patient is suddenly seized with sneezing spells which give rise to simultaneous congestion of the nasal mucous membrane and with an unlimited quantity of thin, hot, watery and irritating nasal discharge. The entire nose becomes red and congested. The ophthalmic disturbances appear immediately after the onset of sneezing. The conjunctivae become noticeably red and congested. The eyes may itch and burn. Lacrimation has already begun. Pupils become dilated, lids wide open, and the patient presents the appearance of staring. Photophobia may be marked even with the patient in a well darkened room. Near work becomes very difficult, if attempted. If these patients are properly treated, the symptoms usually subside immediately, not to return. If these cases go on and establish themselves into morning sneezing (rhinitis

nervosa, vasomotor rhinitis or hay fever), it appears to be a purely sympathetic syndrome. Often these patients who have sympathetic symptoms also suffer some of the neuralgic manifestations, but they will not consent to have their so-called rheumatism, stiffness of the muscles and neuritis of the neck and shoulders, or even any part of a lower half neuralgic headache connected in any way whatsoever with their morning sneezing. Following these cases further, Dr. Sluder says, "It appears that the syndrome becomes subdivided and betrays itself as single symptoms, namely: eye ache, ear ache, tooth ache, neck ache, etc., so it happens that the sympathetic symptom-complex may present a single symptom, sneezing, or eye disturbances which simulate low-grade conjunctivitis, with asthenopia." Dr. Sluder also says he has seen asthmatics of nasal ganglion origin, and proved it by cocainizing and injecting the ganglion, which relieved the asthmatic attacks immediately, and a few times he has seen a red external nose (rosacea) that was of nasal ganglion origin. Why in a neurosis of the nasal ganglion one group of patients will suffer only the neuralgic syndrome in its entirety or in part, another group will be victims of only the sympathetic syndrome, and still another or third group will be subjected to the symptoms of both the neuralgic and sympathetic syndromes, to any extent and degree, no clear statement has as yet been made.

Diagnosis.

With the symptomatology as given above, present in part or as a whole, the diagnosis is practically completed or confirmed by the immediate cessation of all symptoms, as the result of cocainization of the nasal ganglion. This procedure should be repeated two or three times at separate sittings, when symptoms are at their height, to avoid error in diagnosis. In doubtful cases it should be repeated on several occasions and with constant findings only, as relief of all symptoms should be construed as evidence of nasal ganglion neuralgia.

It must be differentiated from sphenoidal and post-ethmoidal infections as suppurative and hyperplastic, which Dr. Sluder forcefully emphasizes is easily done by the results and effects obtained through cocainization of the ganglion. In a neurosis of the ganglion, all the symptoms are relieved in ten minutes, while in sphenoidal and posterior ethmoidal infections it has no effect whatever, because the lesion is central to the ganglion, in which case intrasphenoidal applications of cocaine will relieve.

In the sympathetic syndrome, where the vasomotor secretory phenomenon predominates, as in hay fever, it has been the custom of Dr. Sluder and his associates first to have the patient desensitized to any given pollen or protein to which the patient may be sensitive. If he is permanently relieved, no other procedure is necessary. If it is found that the patient is not sensitive to any pollen or foreign protein, or if sensitive and the administration of the given pollen or protein does not relieve the symptoms, then the nasal ganglion is cocainized repeatedly, and, if relieved of the sneezing attacks by this procedure, the diagnosis of nasal ganglion neuralgia, sympathetic type, is rendered.

The recognition and diagnosis of the cause of a neurosis of the nasal ganglion would seem to appear as mechanical and as an extension of infection or toxins from infection: mechanical, as nasal obstruction or deflection of the nasal septum; extension of infection or toxins from infection, as coryza, especially in the region of the ganglion, or from sinusitis, as sphenoidal and post-ethmoidal.

Prognosis.

The prognosis seems to be very favorable when an accurate diagnosis has been made, and treatment administered with equally as much accuracy and skill.

Treatment.

In a few of the mild cases, cocainization of the ganglion and the application of 2% solution of silver nitrate, or a 4/10% gaseous solution of formaldehyd to the sphenopalatine district one or two times weekly, for from two to four weeks, is of great value; and in some cases it seems to give permanent relief for both the neuralgic and sympathetic syndromes. For the more severe cases, Dr. Sluder injects, and recommends the injection of the nasal ganglion with ½ c.c. of 5% phenol in 95% grain alcohol, after complete cocainization of the ganglion has been obtained. This procedure may give relief for years and it may be permanent; or in some cases the injection of the ganglion may be required as often as once a year.

In our small series of cases, eleven in all

who submitted to treatment and one who would not submit to treatment—neuralgic 7, mixed 1, sympathetic 3—we have not found it necessary to inject the nasal ganglion. While we are aware that such a neuralgia may be present without nasal obstruction, yet in the few cases under our observation and treatment, whether mild or severe, neuralgic or sympathetic in type, we observed a moderately or markedly deflected septum and always present only, or more marked on, the side of the deflection.

Treatment: Regardless of type or severity, with the exception of only the 12th case, our treatment has been the same. In this case cocainization of the nasal ganglion and application of silver nitrate, 2%, to the sphenopalatine district was given on two occasions. This patient has a deflected septum but refuses operative procedure. She still suffers moderate attacks of nasal ganglion neuralgia. The treatment of our other cases has consisted of submucous resection.

Results: Six of the seven cases with the neuralgic syndrome have been completely relieved. The other case is 90% cured according to her statement. Two of the three with the sympathetic syndrome have been entirely relieved. The mixed case also has complete relief. The post-operative period in these cases varies from two months to two years and three months.

Only two and a half years having elapsed since my partner, Dr. L. Leroy Jones, and I have become interested in and worked on nasal ganglion neurosis, so we deem it unwise to draw conclusions. From our experience, however, we believe it as worthy of the conscientious efforts, further scientific investigation and professional skill of the ablest men in our speciality, as any subject within its scope.

Professional Building.

THE CIRCULATION IN THE INFECTIONS OTHER THAN ENDOCARDITIS, RHEUMATIC FEVER, AND SYPHILIS.*

By FREDERICK R. TAYLOR, B. S., M. D., High Point, N. C.

I was originally asked to write a paper for this heart symposium on myocarditis in the infections, but I have changed this title to the present one for two reasons—first, the exact meaning of the term myocarditis is somewhat uncertain, as some would include cloudy swelling and other degenerative processes while others would stick to the etymology of the word and include only strictly inflammatory processes; and second, because many serious circulatory conditions during and after infections, even sudden death, are often quite as much vasomotor in origin as they are myocardial, though the myocardium is usually blamed for the situation. It seems unwise, then, to attempt to limit our discussion to the myocardium, and I beleive it will be more profitable to consider the entire circulation as a functioning unit, and to speak of circulatory weakness or circulatory failure, rather than of pure myocardial disease.

I have excluded endocarditis because I understand that this large subject is to be handled in a separate paper, as it should be; and rheumatic fever, that great destroyer of the heart, though it usually produces a carditis, so frequently leaves its indelible marks in the endocardium, that we naturally associate the two conditions. Syphilis has been excluded because this society has so recently discussed it in a special symposium.

We will begin with the statement that from symptoms and physical signs it is often impossible to distinguish between a weak myocardium and an unstable vasomotor mechanism, though this should be done when possible. The electrocardiograph may help us in this matter, but I am not competent to discuss that, and most patients suffering from infections do not have access to that instrument.

One of the simplest evidences of the effect of the infections on the circulation is the character of the pulse in fever. We speak of the pulse frequency being in proportion to the temperature, but in the very next breath we begin to recite a list of exceptions to this rule, such as typhoid fever, smallpox, influenza, etc. This relation between pulse and temperature curves is a very useful observation, by no means to be cast aside, but it would probably be more correct, if we wish to generalize, to state, as Ivy Mackenzie does, that the pulse varies in fever, not according to the temperature, but according to the specific properties and affinities of the poisons which are generated, directly or indirectly, in the course of the infection. It has been observed that the slow pulse of typhoid fever is not accelerated by atropin, thus differentiating it from the pulse in many

*Read before the High Point meeting of the Guilford County Medical Society.

other diseases and in health. This is highly suggestive of the importance in certain infections of a toxic effect on the regulatory mechanism of the circulation as well as on the heart and vessels.

It has been well said that pathological anatomy is the groundwork of modern medicine, but there are many important circulatory conditions which it does not explain, especially certain transitory toxic symptoms. The best pathologists sometimes fail at post mortem to find an anatomic explanation of a death. Many well known chemical poisons, such as strychnin, morphin, nicotin, pilocarpin, etc., may kill quickly without leaving recognizable anatomic changes, and it is just as reasonable that toxic conditions resulting from infections often leave no anatomic trace.

Albuminous degeneration or cloudy swelling of the myocardium is very frequent in the infections, but we know little of its clinical significance.

We used to hear much of fatty degeneration and fatty infiltration, but again hear what Ivy Mackenzie has to say in his chapter on "The Circulation in Infectious and Toxic Processes" in Volume II of *Oxford Medicine*. He states that the clinical importance of fatty *degeneration* has been much overestimated in infectious and toxic states, and that it does not exercise a determining influence on the course of events. He further states that fatty *infiltration* has no association with infectious or toxic processes, though by its presence it may render the heart more liable to premature exhaustion in toxic states.

Waxy and hyalin degeration of the myocardium are sometimes seen in special diseases, notably typhoid fever and diphtheria, where they may also occur in the skeletal muscles.

Necrosis may occur with septic infarction in pyemia, but this is of no special importance, as the whole body is then overwhelmed with a necessarily fatal condition. Brown atrophy, seen in advanced pulmonary tuberculosis, is also of no clinical importance.

In the strictest sense of the term, myocarditis is rare in the infections as a whole. It is the rule in acute rheumatic fever as part of a carditis, it is fairly frequent in diphtheria, especially when treatment is not given early, and it is occasionally seen in typhoid fever. Ivy Mackenzie describes an acute idiopathic myocarditis which runs a rapidly fatal course typical of a general infection, with the only gross evidence of disease at autopsy in the myocardium. The condition does not seem to be widely recognized as a clinical entity, and I know nothing of it from personal observation.

Apart from chronic rheumatic infection of the heart and cardiac syphilis, chronic myocarditis in the strict sense of the word does not exist, though a fibrosis of the heart is common.

We must confess that we often cannot make any accurate estimate of the state of the myocardium in many acute infections such as pneumonia, scarlet fever, measles, smallpox, influenza, etc. In many of these the heart may be rapid or slow. The sounds may be feeble, but this is not necessarily evidence of myocardial disease. The heart sounds may be feeble in a syncopal attack, but syncopal attacks, with the exception of Stokes-Adams disease, are vasomotor in origin rather than myocardial. So the weak sounds in infectious diseases may be in part due to a disorder of the nervous mechanism regulating the circulation.

Certain cases of sudden death without dyspnea, cyanosis, or edema, during or soon after an acute infection, are commonly attributed to "acute dilatation of the heart." Acute dilatation of the heart without dyspnea or cyanosis is a difficult thing to explain and, when at autopsy we find a tremendous engorgement of the splanchnic vessels, and recall that during the fatal attack pallor and general collapse were the cardinal elements of the picture—in short, that the condition was absolutely typical of shock—it makes us pause to inquire if our long cherished views concerning heart failure in the infections are adequate. We dare not say that the heart was in no degree responsible, but surely the picture implicates the vasomotor mechanism, and we should really speak of death from *acute circulatory failure*, rather than call the whole process acute dilatation of the heart. The one is stating something that we know to be a fact, the other is assuming something we do not know and cannot prove to be true.

I will not say much about the arhythmias in the infections, as the paper on graphic cardiologic methods will no doubt deal exhaustively with them. However, many types of arhythmia should be recognized on physical examination. Sinus arhythmia is of no importance,

and is usually easily recognized by the fact that the pulse becomes faster during inspiration, especially towards the end thereof, and slows during expiration, and especially during the pause following expiration. Extrasystoles are characterized by premature heart beats which often do not reach the radial pulse, followed by a compensatory pause which brings the pulse back into the dominant rhythm. A series of several extrasystoles in succession may be confusing, and require graphic methods to demonstrate their true nature. Extrasystoles *per se* mean nothing, but, taken in connection with other circulatory abnormalities such as valvular disease, arteriosclerosis, high blood pressure, etc., or in the presence of nephritis, may be of ill omen. Auricular fibrillation, characterized by a total irregularity of the pulse, absolutely without any dominant rhythm is common in a failing circulation. and is usually evidence of a damaged or badly fatigued heart muscle. Auricular flutter is hard to diagnose without graphic methods. John Hay gives the following criteria for the suspicion of it: a persistent steady pulse rate of 120 and over, not materially modified by rest, movement, or emotion, which, on the administration of digitalis, either shows a sudden marked slowing or develops an arhythmia. A peculiar arhythmia sometimes occurs in flutter that is highly suggestive, and that is, an alternating series of rapid and slow pulse beats, the fast ones being about double the frequency of the slow ones, without any relation to the respiratory phases, and without any compensatory pauses. I recently saw Dr. Henry A. Christian make a provisional diagnosis of flutter on the strength of this arhythmia, and confirm it with an electrocardiogram, in a patient desperately ill with pneumonia.

Sir James Mackenzie has done us a great service in diverting our attention from the minutiae of murmurs to the vital question of the state of the myocardium, and the presence or absence of the phenomena of decompensation, but let us not be too insistent on focusing our attention exclusively on the myocardium. We must consider the whole circulation as a functioning unit, and ask not simply "What is the state of the heart muscle?", but "What is the state of the circulation?"

There is a syndrome common after any severe prolonged strain, frequently seen after the acute infections, known under various names such as neurocirculatory asthenia, disordered action of the heart, irritable heart of soldiers, etc. Just what it is we do not know, but it is certainly not exclusively myocardial, it does have pronounced vasomotor features, and the nervous system may be affected in various other ways. The prognosis is good in the long run, but the condition is often an obstinate one.

Rest is the one prime essential in the treatment of the circulation during an acute infection. Little other treatment is indicated unless there is definite evidence of circulatory weakness. Someone will at this point no doubt raise the question of routine early digitalization of pneumonia patients. I do not have the slightest objection to it, and, indeed, commonly practice it, for it at least has the definite advantage of giving one time to find out whether one has an active preparation of digitalis or not. Other than this, with modern methods of rapid digitalization, the value of the method may be open to question. This may sound like heresy and, until recently, I should have stoutly supported the routine digitalization of pneumonia patients as essential, but let me quote from a letter received from Dr. Henry A. Christian dated June 28, 1921. He writes, "As to digitalization in pneumonia, I myself doubt its value. In my judgment it is not at all necessary now that with large doses we can get a quick digitalis effect. Herein is one of those curious happenings which we often see. In Cohn's work on pneumonia he found a considerable number of cases of fibrillation, etc., in his first 100 cases of pneumonia, and preached digitalis as a result. In his subsequent studies he found very few cases in which cardiac conditions arose likely to be benefited by digitalis. The latter has certainly been my experience." Again Dr. Christian writes on July 16, 1921, "Except for those cases of pneumonia developing auricular fibrillation or some other similar cardiac disturbance, or in those cases already having a cardiac insufficiency before the pneumonia, I personally do not think that digitalis will accomplish anything."

When definite evidence of circulatory weakness appears in an acute infection, we must try to consider so far as possible the type of disturbance confronting us, in order to give the most effective treatment. There are three types commonly met with.

1. Typical cardiac decompensation, with dyspnea, cyanosis, edema, etc. It is in this type that morphin and atropin given at the onset exhibit their happiest effects. This must be supplemented with digitalis, given until results are obtained. The initial dose of digitalis should be rather large though I confess I have never yet resorted to a single dose of a half an ounce of the tincture intravenously. Half a dram to a dram of the tincture, or 3 to 5 grains of the powdered leaves has seemed to me sufficient in most of my patients as an initial dose, and subsequent doses will be calculated according to the effect of the first one, being reduced as soon as a digitalis effect becomes apparent.

2. The second type of circulatory weakness encountered in the infections is that type above mentioned which presents a picture of shock, and the treatment is the treatment of shock—warmth, stimulation, intravenous saline containing adrenalin, bandaging the extremities, etc. However, as stated above, we cannot completely separate cardiac failure from vasomotor failure or other disturbance of the regulatory mechanism of the circulation such as vagal disturbances, etc., and during and ever since my service as resident physician in the Germantown Hospital, Philadelphia, it has been my practice in severe circulatory failure to give a variety of drugs in sequence, with the idea of working on various parts of the circulatory apparatus in succession, and avoiding overstimulation of any one part. My usual scheme of treatment, which seems to have been justified, at least in some cases, by results, is to use four drugs in sequence, giving each drug every eight hours, so that the patient gets one or another every two hours. These drugs are digitalis, atropin, camphor, and caffein. They may be given in any order, though it is well to have a dose of atropin due early in the night, and to combine morphin with it if the patient is restless. All except the digitalis are given hypodermically, and that is so given if the patient cannot take it by mouth. I have for years believed that better results can be obtained in this way in acute circulatory failure than by using a single drug, and this is in accord with the theory that the whole circulation fails rather than the heart alone. In addition to the drugs mentioned, if the patient is given to "sinking spells" which alarm the family, there is no harm in giving aromatic ammonia at any time if he can take it, as its action is very fleeting. I follow Crile in believing that strychnin is harmful in shock or in acute circulatory failure of any kind.

3. Neurocirculatory asthenia persisting after convalescence from an infection is well established, requires different treatment than other forms of circulatory weakness. Here absolute rest is usually inadvisable. Judicious exercise, especially exercise enjoyable to the patient, such as that obtained from games requiring only moderate effort, is beneficial from both its physical and psychic effects. However, care must be taken to avoid over-exertion.

There is a possibility that the general asthenia so characteristically following influenza may be due to adrenal insufficiency, but in this endocrinomaniac age we must adopt the scientific attitude of the gentleman from Missouri. Again let me quote from a personal communication from Dr. Christian, dated October 17, 1921. "Finally, in regard to adrenal insufficiency in influenza, I do not think you will find anything about it in my chapter on influenza, (i. e., in *Oxford Medicine*) and I doubt whether there is any association. However, one of my associates brought up the point as, in studying some of the cases, he felt that there was a considerable number of patients who showed hemorrhages into the adrenal in cases of influenza. I do not know whether he ever went over enough cases and checked up these lesions to justify any final statement. The adrenal is an organ which lends itself rather easily to artefacts, and one has to be very careful in drawing conclusions from what you find in the adrenals at death. I pointed this out to him at the time. I will find out whether he did any more about it, and will keep my eye opened for descriptions of lesions in this organ."

Since receiving this letter from Dr. Christian I have not seen anything further on this subject, so suppose it is still at least very doubtful whether adrenal insufficiency exists in these cases.

In closing, let me emphasize that I do not believe any routine scheme of treatment is applicable to all cases, and it is always necessary to meet individual needs as they arise. The best of care will not always prevent the Grim Reaper from harvesting in childhood, youth,

and maturity, by means of circulatory failure in the infections, but there is no greater joy than the realization that in an occasional case one has been privileged to stay his hand and restore to health a patient in the morning or the high noon of life, whose presence can for years to come be a blessing to his family and community.

PLEURISY—ITS ETIOLOGY AND SIGNIFICANCE.*

By L. F. COSBY, M. D., Abingdon, Va.

In making the above selection for a subject of this paper, I had several topics in mind when this idea came to me as being one of the best and most difficult subjects that I might have selected, so if I make many grave errors or misstatements, please be kind hearted and overlook them. As all of you gentlemen know, this is one disease that is most overlooked by the men in general practice, and the one that receives the least attention of physicians. How many of us pass up a case of pleurisy by not even examining the chest and by telling the patient that he or she has "intercostal neuralgia, nervous indigestion, or that it might be a touch of muscular rheumatism." The above facts, to which I plead guilty, proved the incentive that made me take the above subject for discussion.

Pleurisy or pleuritis is an inflammation of the pleural membranes that may involve their parietal, visceral or diaphragmatic coverings.

Etiology—The inflammatory signs may be confined to the pleura, in which case it may be spoken of as primary. The simplest form follows exposure to cold. In all probability the majority of these pleurisies are not primary but represent the localized flaring up of an old inflammatory process in the neighboring tissues of lung and glands. Photographs of the X-ray reveal the presence of old tubercular areas in the region of many pleurisies, wherein the ordinary methods of diagnosis present only the evidence of the pleural involvement. The tubercular pleurisy is always secondary to an older focus of infection.

Secondary pleurisy has its origin in (1) extension of inflammation from the lungs, especially in pneumonia, tuberculosis, pulmonary abscess and lung infarcts: (2) extension of inflammation from adjacent organs and structures, notably in pericarditis, mediastinitis, bronchial lymphadenitis, and following perforation of the diaphragm from liver abscess or cancer of the stomach; (3) metastatic infection from tonsillitis, articular rheumatism or general septicemia; (4) association with chronic diseases such as nephritis, leukaemia and gout.

The lung, enveloped as it is by the visceral pleura, is responsible for the greatest number of pleurisies. Nearly every form of inflammation of the lung involves the pleura sooner or later, whether it be pneumonia, tuberculosis abscess or infarct. Frequently the pleuritis is obscured by the overshadowing signs of lung inflammation, though the presence of pain is always indicative of pleurisy or pleural involvement.

Bacteriology—The exact determination of bacteria responsible for pleurisy is not always possible. The sputum and pleural exudate offer the best material for examination. But in both media secondary invaders may dominate over the original organisms. The bacteria commonly found are the tubercule bacillus, pneumococcus and streptococcus. Other organisms occasionally obtained from pleural exudates are Friedlander's bacillus, influenza bacillus, diphtheria bacillus, and typhoid bacillus. It is interesting to note that pleurisy is relatively rare in three diseases in which pulmonary complications are often present, influenza, typhoid and measles. The leukopenic characteristic of these infections may offer an explanation of this fact. Mixed infections of pyogenic organisms with tubercle bacillus are common and often, when cocci only can be found in the exudate, a primary tuberculous inflammation may be diagnosed by the general physical findings.

The morbid anatomy we will not discuss as all of you are familiar with the pathological findings in this disease.

Before going further, I would like to make a few remarks concerning the "Absorptive power of the pleura." The channels through which the products of absorption flow are the endothelial cells, lining the pleura, the lymphatics and the blood vessels. Fibrin is reduced to a state of liquefaction preliminary to absorption. Fluids are taken up under certain conditions by the blood and disseminated through various parts of the body. Experiments have shown that a hypertonic salt solu-

*Read at meeting of Sullivan, Johnson and Carter County, (Tenn.) Medical Society at Bristol, Va.-Tenn., June 1923.

tion introduced into the pleural cavity is followed by increase in the fluid content within a few hours. *Per contra* a hypotonic salt solution is rapidly absorbed.

Clinical Types of Pleurisy—The clinical course of pleurisy may end after the fibrinous stage, it may go onto the stage of effusion, or it may terminate in the formation of pus. There are usually three types of pleurisy recognized for descriptive and diagnostic purposes and these types are dry or fibrinous pleurisy, pleurisy with effusion, and empyema. In addition, there are a number of atypical forms which we will not discuss, being of lesser importance than the ones mentioned above.

Dry Fibrinous Pleurisy—Etiology: This condition is an inflammation of the pleura associated with an exudate of fibrin. The cause of fibrinous pleurisy in order of their frequency are the tubercle bacillus, pneumococcus and streptococcus. Nearly all of the dry pleurisies are of tubercular origin, a point that all practitioners should remember and bear in mind when treating a case of this kind.

Pleurisy with Effusion—This is an inflammation of the pleura associated with an exudate that may be serous, serofibrinous or hemorrhagic. Etiology: It is well to keep in mind that all the clinical types of pleurisy are arbitrarily classified. A dry pleurisy more often than not will yield a few drops of fluid, mostly serum to the exploring trocar. The terms employed are derived from the predominating elements found in the exudate, fibrin, serum, blood and pus. The factors determining the proportion of these elements are unknown or only partially understood. For lack of specific information we assume that the quality and virulence of the germ on the one hand and the individual reaction of the tissues on the other hand are chiefly concerned. But the type of inflammation that will be excited by a germ organism cannot be predicted. Thus the tubercle bacillus may cause a simple fibrinous, serous, hemorrhagic or purulent exudate. A pneumococcus pleurisy may terminate in the fibrinous, serofibrinous or purulent stage. The same variety of exudate prevails in pleurisies accompanying pneumonia and cancer.

The serous or serofibrinous effusion with an amount of fluid sufficient to give physical signs is generally of tuberculous origin. It is estimated that between seventy and eighty per cent of all cases are tuberculous. Only rarely can the tubercle bacillus be recovered on a cover glass preparation or in the cultures, but the inoculation of guinea pigs with the fluid causes death from tuberculosis in a high percentage of the cases. Frequently too, an effusion occurs in association with tuberculous lesions in the lungs and bronchial glands. Serous exudates of the pneumococcus origin are less common than the fibrinous. They have a greater tendency to become purulent than the tuberculous forms and are usually more localized. Occasionally streptococcus effusions remain serous but all the pyogenic cocci show a disposition to pus formation.

It might be well at this part of the paper to take a little time and discuss the diagnosis of pleurisy with effusion.

The recognition of a primary serous pleurisy ordinarily presents little difficulty, because the physical signs are characteristic. The secondary cases need to be differentiated from pneumonia. Both effusion and consolidation give dullness and may exhibit bronchophony, but in the latter the viscera are not displaced. A thickened pleura is not always easy to distinguish from pleural effusion, and the two conditions may both be present. Exploratory puncture will clear up the diagnosis. Puncture is also necessary to definitely diagnose a small or circumscribed exudate. A tumor mass may give rise to flatness on percussion and its presence is often suspected for the first time after a dry tapping, a point well to be remembered.

Empyema is a pleurisy with purulent effusion. Etiology: The exudate may be purulent from the beginning, but usually it starts from a seropurulent effusion and gradually acquires a thicker consistency as the pus cells increase. The pneumococcus and streptococcus are the common etiological germs found in the exudate. According to most observers, the pneumococcus is the causative organism in about half of all cases in hospital practice. Lord, in his series of empyemas, found streptococcus in 39.4 per cent, pneumococcus in 20.4 per cent, staphylococcus in 3.6 per cent, and mixed infections in 16 per cent. The pus was sterile in 18 per cent, and many of this group were tuberculous. But during the war period the statistics show a predominance of the streptococcus. The great epidemics of measles, influenza and streptococcus pneumonia were associated with an overwhelming proportion of

streptococcic empyemas. Empyema is generally a complication of some lung inflammation. In military practice, penetrating wounds of the chest contribute a fair share of the cases.

Having outlined and discussed the various etiological factors of pleurisy in the foregoing statements, I wish to lay stress on one or two points which I think will be of interest to all. During my student days in medicine, I remember well the statement that our professor in medicine made, "that an idiopathic pleurisy" was always tubercular in origin, and in after years in practice I had a case which was very interesting, of which I will give a brief outline.

Female, white, age twenty-four, of good social and moral standing, married, complained of anorexia, mental torpor, and a general down and out feeling which had been going on for several weeks, accompanied by a slight feeling of discomfort and occasional pain in right chest. She had always been a strong and healthy girl, had the usual diseases of childhood, no serious illness of any kind, and, since marriage, had given birth to one strong and healthy girl baby.

Upon physical examination I could not make out anything in the chest except a slight pleural rub in right lower chest, which was not accompanied by pain on deep inspiration or expiration. Thinking possibly that there might be some pulmonary involvement, I made several examinations of the chest, but always found it negative. Abdomen was negative at all times, while she was under my care. Urine and blood normal, as well as temperature and pulse. Bearing in mind that there might be a possible focus of infection that I had overlooked, I advised her to go to a T. B. specialist, which she did, and he reported negative findings in her chest. About three months after this illness she was taken suddenly ill with a severe colicky pain in right lower abdomen and elevation of temperature, slight nausea, but no vomiting. She was immediately taken to a hospital, where the regular routine examination was made and the only thing of interest was rigid right rectus, and elevated temperature, blood and urine being normal. The surgeon advised operation under local anesthesia and, upon opening up the abdomen, he found a badly inflamed appendix with a localized peritonitis with quite an exudate which proved to be tubercular.

I simply mention this case to show you that while the main initial symptoms in the chest were pleuritic in character, it developed later on that the appendix was the seat of trouble. After convalescing from the operation, this patient again went to a chest specialist and he reported negative findings, and today she is a strong and robust woman.

Before closing this paper I would like to impress the importance of making a thorough physical examination in all cases which come to you complaining of a pain in the chest. The average physician, I am sorry to say, does not make a thorough examination of all patients, but I am sure, if he should do so, he would find that he would be able to clear up a good many obscure cases and that he would make a better impression on his clientele.

OCULAR INTERPRETATIONS IN THE DIAGNOSIS OF SYSTEMIC DISEASE.*

By HUNTER H. McGUIRE, M. D., Winchester, Va.

First, I desire to express my appreciation for the honor conferred upon me at your last meeting, when you saw fit to elevate me to the presidency of an association which, though young in years, is already assuming a prominent position in developing scientific medicine in this great old Commonwealth. I liked to feel, however, that your action has been the result more of a desire, on the part of this Association, to give public recognition to the specialty I represent, than to honor me personally, and I sincerely hope that such has been the case.

It is with this thought in mind that I feel constrained to point out very briefly some of the great developments in the science of ophthalmology in recent years and to emphasize what these developments have meant to internal medicine. That ophthalmology has more than kept pace with the other branches of medicine is without question, and that it has become to be recognized as one of the most important specialties of medicine can be asserted with equal emphasis.

It is a significant fact that the policies of a great medical organization, the American Medical Association, are, this year, being guided and directed by an able representative of ophthalmic science, Dr. George E. de Schweinitz, of Philadelphia. This one fact, it seems to me, indicates that the medical pro-

*Address of president before the Medical Association of the Valley of Virginia in Winchester, May 31, 1923.

fession of this country has been impressed by the contributions ophthalmologists have made concerning ocular interpretations in the diagnosis and treatment of constitutional disease. It is, therefore, with the view of enlisting your sympathy and interest in this phase of the work that I wish to direct your attention to a few ophthalmoscopic conditions which in themselves point to certain pathologic processes in distant organs, and to make some comments upon visual field changes in the diagnosis of certain diseases of central origin.

The ocular changes in the various forms of nephritis, manifesting themselves in exudative types of retinitis with retinal hemorrhages and occasionally optic neuritis, are always discussed in textbook articles pertaining to this subject, and yet how often are these patients first seen by the ophthalmologist, after a destructive pathologic process in the kidney has practically doomed its victim.

We hear much these days of arteriosclerosis. In fact, it might be said that it has become to be a fashionable disease, and the man who can boast of hardened vessels and a high blood pressure at once assumes an air of distinction, which his less fortunate fellowmen are unable to obtain. In general arteriosclerosis, the retinal vessels of course share and, while it is not possible in all cases to detect any evidence of the disease with the ophthalmoscope, in the great majority it is possible to do so; consequently, arteriosclerosis is one of the diseases often first discovered by the ophthalmologist.

It is a well known fact that the retinal vessels can be examined during life with a minuteness that is not possible with any other vessel of the body, for they are seen with great distinctness and under a magnification of about 15 diameters; thus, changes in their structure are readily detected, and the progress of the changes can be traced. It would be interesting, if time permitted, to describe these changes from the incipient stage of the disease to the stage where we are able to observe almost complete obliteration of the vessel.

The uveal tract, because of a generous blood supply, is a favorite location for evidences of constitutional disease. The great vascularity of this structure with frequent anastomoses of the large sized vessels appears to furnish a particularly fertile soil for the elimination of bacteria or their toxins, and we not infrequently find here manifestations of disease before it is discovered in other parts of the body. As examples of such instances may be mentioned syphilis, tuberculosis, dental disease and gastro-intestinal disturbances.

The various changes we find in the optic nerve, originating from new growths in the brain or toxins in the blood stream, ranging from a slight hyperemia to choked disc, the slowly progressive optic atrophy of luetic origin, the picture indicative of pituitary body disease, are manifestations which deserve the attention of the internist and neurologist, in the study of their cases, and should not be overlooked in reaching logical conclusions in the diagnosis of disease.

It is not possible even to mention many important ophthalmoscopic changes which should concern the internist in his analysis of an individual case and my sole desire in bringing this subject to your attention is to emphasize the importance of complete ophthalmoscopic investigation in the diagnosis of those diseases in which we know ocular changes occur.

In the present state of our knowledge and in the rapidly developing methods of accuracy in diagnosis, we are frequently overlooking very important symptoms if we fail to study the eye-ground.

The ophthalmoscope should be as universally employed as the stethoscope. I do not mean to intimate that the general medical practitioner, or even the specialist in internal medicine, will be able to interpret eye-ground changes with the same degree of accuracy as the trained ophthalmolgist but I do feel that, with the new type of electric ophthalmoscope and a reasonable degree of practice, he will be able to recognize departures from the normal. He certainly should be in a position to determine whether he is dealing with a healthy or diseased fundus and can, if necessary, call to his assistance an eye man for the interpretation of the clinical picture.

The ophthalmoscope of Hemholtz, which has in the process of development attained a greater degree of efficiency in the present electric instrument, has opened up a field of investigation, the value of which cannot be estimated, but ophthalmology is now in a position to assure the medical world that an even greater field of investigation is shortly to be developed. The advent of the slit lamp of Gullstrand, an instrument with which it has become possible to study the microscopical

structure of the living eye and thereby recognize pathological changes in the cellular tissues, promises to revolutionize ocular pathology. While yet in its infancy, both American and European investigators, in their researches, have convinced the ophthalmological world that slit-lamp microscopy is destined to become of far reaching value in the study of pathological conditions of the eye. It would seem, therefore, that this method of investigation should establish an even closer relation between ocular lesions and systemic disease than has been obtained up to this period.

Perimetry, or the study of visual field changes, has undergone rapid developments in recent years and has added much to our knowledge of diseases of the optic tracts. The characteristic changes in simple glaucoma, in the various types of optic atrophy, in retrobulbar optic neuritis, and in diseases of the chiasm and pituitary body, have been of untold value in enabling the ophthalmologist to correctly interpret lesions behind the eye and in aiding the neurologist in the diagnosis of functional nervous diseases.

This brief and very imperfect presentation of a subject which needs more elaboration will, I trust, at least help to stimulate an interest on the part of this Association in establishing a more intimate relationship between ocular pathology and general systemic involvement.

NEGLECTED HYGIENIC MEASURES IN THE TREATMENT OF ACUTE INFECTIOUS DISEASES.*

By S. B. NICKELS, M. D., Clinchport, Va.

In choosing this subject for my paper today, it is not my intention to bore you with something that you already know but its purpose is briefly to call your attention to a few measures —hygienic and therapeutic—which are very frequently neglected by many physicians, especially by those practicing in rural districts who do not have access to a hospital, and to a lesser degree those practicing in large towns and cities.

One of the first commonly neglected measures to which I wish to call your attention is *care of the mouth* in acute infectious diseases, or especially acute illness accompanied by a temperature. To my mind this is one of the most frequently neglected points by the majority of physicians today. The mouth should be kept scrupulously clean by a cotton swab applicator two or three times daily. Saline solution, sodium bicarbonate, euthymol, borax solution, or a combination of these, with ten or twenty per cent glycerine or other mild cleansing solution such as Dobell's, may be used. Keeping the mucous membrane of the mouth clean and the teeth properly cared for will shorten many an hour of suffering due to stomatitis, infections, and abscess of the salivary glands which frequently takes place, especially in pneumonia. The patient rests more comfortably, takes nourishment better, and digestion is not altered by the bacteria which would otherwise be swallowed. How can a patient with a heavy coat of sordes on the teeth and ulcerated patches over the mucous membrane of the mouth take nourishment with any degree of comfort? The writer on his first visit to a patient having an acute infectious disease prescribes the following simple mouth wash to be used as directed previously:

Euthymol 3 ounces.

Aqua qs 6 ounces.

Protection of mucous membranes from trauma, etc., with albolene and similar petroleum oils, is of value following cleansing of mouth, especially in mouth breathers and where there is mucous membrane infection. Carious teeth, old roots, tartar deposits, etc., should be seen to. Antiseptics such as phenol, eucalyptus, argyrol, silver nitrate, iodine, etc., are of doubtful value. Their use may cause injuries to mucous membranes. If used they should be in dilution too weak to cause irritation.

Second, *Nasal Infection* and nasal vault infection are frequently neglected as well as accessory sinus disease. These may be sources of danger but are difficult to treat effectually by the general practitioner. Mechanical cleaning by swabs is allowable: syringing is liable to cause injury or spread infection. Patient may clean nose by blowing, if old enough: application of ointment and medicated oils for protection and mild antiseptic action is of value.

Third, *Care of Skin*: The patient should have at least one bath daily and be sponged oftener in case of a high temperature. The patient should be sponged or bathed first with warm water followed by a mixture of equal parts of alcohol and two per cent boric acid in water at the required temperature. The following complications can generally be prevented by an experienced nurse:

*Read at the meeting of the Southwestern Virginia Medical Society in Christiansburg, May 17 and 18, 1923.

1. Bed sores;
2. Corneal ulceration;
3. Middle ear infection;
4. Parotitis;
5. Boils;
6. Cracked lips;
7. Tender toes;
8. Hypostatic congestion.

(1) To prevent bed sores: (a) Keep sheets clean, dry and smooth. (b) Clean the skin promptly, dry it, rub in zinc oxide ointment and powder with starch or talcum. (c) Do not allow prolonged pressure on bony prominences. If a red spot appears where there has been pressure, keep off that part by rings or pads and paint the spot with picric acid, one per cent.

(2) To prevent corneal ulceration, keep cornea clean by bathing the eyes every four hours with a two per cent watery solution of boric acid.

(3) Boils in crops are generally due to the use of dirty sponges. If a boil appears, care must be taken to avoid spreading of the infection.

(4) Cracked lips can be prevented by the use of cold cream.

(5) Middle ear infection or parotitis, as mentioned before, may result from improper care of the mouth. The mouth may be cleansed as directed before and the throat sprayed every four hours with a non-irritating antiseptic as Dobell's solution, or alkaline antiseptic or an oily spray as chloretone inhalant (P. & D.) will serve, diluted if necessary, to avoid irritation of the mucous membranes. Excessive dryness of the tongue from mouth breathing can be prevented by the use of vaseline or liquid albolene.

(6) Hypostatic congestion of the bases of the lungs is due in part to protracted lying in one position. It can be combated, if not prevented, by rolling the patient on one side and supporting him in position for an hour or more by means of a pillow. The patient should then be rolled on to the other side for another period of time, and these maneuvers should be practiced at least once daily.

Fourth, *Isolation* is of great value and should be as early as possible. Finding of missed cases, such as scarlet fever, etc., in a family or neighborhood or school are often possible by investigation at the time of the first recognized case. Isolation should be carried on for four weeks in case of scarlet fever and until there are no abnormal discharges according to the discretion of the attending physician. Technique of isolation is that of surgical asepsis reversed, that is, to keep infection in a small zone instead of a small area free from infection. Avoid infecting clothing or utensils from careless touching of patients or putting infected hands or things into pockets, etc. Wash hands carefully on leaving zone of infection. Do not handle face or uninfected objects until hands are thoroughly cleansed. Be careful of door-knobs. Boil dishes, utensils, etc., as they leave patient. Do not put down infected dishes, etc., in an uninfected zone. Use care to prevent discharges from nose, throat and ear, especially in scarlet fever, from being spread about sick room.

The foregoing measures are briefly those most frequently neglected by the general practitioner and, when given proper attention, our patients escape many hours of suffering which would otherwise happen.

COMMUNITY SYPHILIS WITH OBSERVATIONS ON TYPE INFECTION.*

By JOHN J. GIESEN, M. D., Radford, Va.

The prevailing idea is that syphilis, as a health factor, belongs to the larger cities. This is to a certain extent true. However, there can be and there frequently are small communities in which the occurrence of the disease is alarmingly frequent. This is probably the result of conditions peculiar to the particular community. One syphilitic in a village or town can quickly infect, directly or indirectly, a large percentage of the population. Various factors and conditions may aid or retard infection, where there happens to be a focus or foci.

During the last four years, I have had the opportunity of treating and seeing in consultation about 100 cases of syphilis in all of its stages, the majority of the cases originating in small towns in West Virginia, Tennessee and southwestern Virginia. All of these cases have been carefully studied and the source of infection determined when possible. In a resume of this series of cases, I have noted a striking fact that fourteen out of the 100 cases came from two small communities, both of which have populations less than 400. Another fact of interest is that the conditions and factors which would ordinarily tend to retard

*Read at the meeting of the Southwestern Virginia Medical Society at Abingdon, September 6-7, 1923.

or favor spread of the disease were markedly different in these two communities. Still another fact of interest is that in the cases from one of the communities we found one type of syphilis predominating, while another type predominated in the cases from the other community.

The names of these two little towns, for obvious reasons, will not be mentioned. One of them is a coal-mining community in southwestern Virginia; the other is a rural community in east Tennessee. The Virginia community furnished eight cases and the Tennessee community six cases to the series. From what we have been able to learn by inquiry and investigation, the morals and standards of living in the Virginia coal-mining community are of low order, while those in the Tennessee rural village are of the highest type. All of the patients from the Virginia community were illiterates or near-illiterates, those from the Tennessee community were all well educated and of a high order of intelligence. However, the majority of the cases from both communities were unaware of the fact that they had syphilis and sought medical advice for relief from some other condition or from some symptom of the unrecognized syphilis. In the Virginia community, where the morals are poor, where marriage is not a stable institution, and where illegitimacy is prominent, we can readily understand how one infected person could, directly or indirectly, infect a large percentage of the population. In the Tennessee community, where conditions are just the reverse, it is not so readily understood, particularly when it is noted that none of our six cases from this community are in any way related, either by blood or marriage. In the Virginia community, the disease seemed to be more of a family affair, all of the eight cases being closely related, either by blood or marriage.

All of the eight cases from the Virginia community exhibited lesions of the skin and bone, one presenting also a cardio-vascular complication, while none were of the neurological type. The Tennessee community's six cases were all of the so-called neurological or "nervous" type: one was a psycho-neurotic with syphilitic background, one had syphilitic epilepsy (congenital), two had general paresis, one had tabes dorsalis, and one had a brain gumma. All of the Virginia cases responded well to therapy and all except two, who did not complete treatment, made apparently entire recovery. None died. Three of the Tennessee cases subsequently died, the two paretics and one with gumma of the brain, the other three responded poorly to therapy and none made complete recoveries or even satisfactory improvement.

None of the fourteen cases from the two communities were in the acute stage of the disease when seen. All of them had had their trouble for several years or longer. Ten of the cases were previously undiagnosed, although all of them had consulted physicians from time to time for various ailments. None of them had received any anti-luetic treatment prior to coming under our care.

These facts have been enumerated to demonstrate that syphilis can and does infest small communities, even where local morals and standards of living are good, and that the small town or rural physician lets too many of these cases slip through his fingers undiagnosed. By checking up suspicious lesions or symptoms and keeping his eyes open, he can often recognize these cases early instead of allowing them to progress undiagnosed to a stage where therapy is not curative. By an early diagnosis and the prompt institution of treatment, the patient's chances for cure are greatly increased and at the same time the chances for spread of the disease in the community are correspondingly decreased.

It can reasonably be presumed and probably actually demonstrated that all of the six cases of so-called "nervous" syphilis, originating in the Tennessee rural community, developed from some one focus, and that the eight cases from the Virginia coal mining community with predominating skin and bone lesions also developed from some one original focus. All of the fourteen cases, of course presuming our diagnoses to have been 100 per cent correct, were due to the specific organism —the treponema pallidum. In the one instance, however, the organism seems to have had a selective affinity for the skin and bone with entire freedom from cerebral or spinal manifestations, while in the other instance the organism seems to have affected principally the nervous system. This is an illustration of the accepted theory that in syphilis there are true type infections or different strains of the organism at fault.

St. Albans Sanatorium.

NON-PULMONARY FORMS OF TUBERCULOSIS AND TUBERCULOUS COMPLICATIONS.*

Their Symptoms and Treatment.

By H. R. EDWARDS, M. D., Richmond, Va.

Under this heading we may discuss the more frequent non-pulmonary forms of tuberculosis, also some of the more common complications usually associated with pulmonary tuberculosis.

In general we may say that the symptomatology of all forms of tuberculosis is more or less similar, especially in the toxemic symptoms manifest, that is, fever in the afternoon, loss of appetite and weight, fatigue, etc., with more or less specific symptoms relative to the particular organ involved, as loss of voice in laryngeal tuberculosis and hematuria in the renal form. For convenience of discussion we will mention the various groups; lymphatic, serous membranes, and special organs.

Tuberculosis of the lymphatics is most often observed in early childhood. Though it is present to some extent in the glandular structure of the majority of adults, as a rule the infection is traceable to early childhood. In the majority of cases it is only slight in extent. The glands usually affected are the cervical, tracheo-bronchial, and mesenteric, the last receiving their infection both from the human and bovine bacilli. Tissue destruction may progress to suppuration with the usual scrofulous conditions, which may or may not heal, but are amenable to the usual methods of treatment. The cervical glands show the largest amount of suppuration.

The symptoms are those of toxaemia, loss of weight, fever, and the phenomena associated with the enlargement of the glands. There is often pain over them and along their course: a child cannot seem to gain weight; he is backward in his classes and listless. The treatment consists of rest, correction of sleeping and living habits and proper diet. The violet ray has perhaps its greatness usefulness in tuberculosis in this particular field; exposure to sunlight in graduated dosage is very effectual. Surgery is a method of last resort and should be abandoned if possible. Tracheo-bronchial and mesenteric forms are given the usual systemic treatment.

The serous membranes most often affected are the pleura and peritoneum. The pericardium is occasionally affected, but that is not common. There is a latent form with symptoms of cardiac insufficiency, an acute form with the usual general symptoms, quite often a miliary form associated occasionally with cerebro-spinal manifestations. There may still be an exudative form with associated tuberculous and pericardial symptoms.

The pleural form is perhaps the most common form of tuberculosis of the serous membranes. It has been found that nearly all pleurisies with effusion are of tuberculous origin and occur before, with, or following disease of the parenchyma of the lung. The pleural form may be insidious or acute in onset. Usually there are adhesions formed. It may be hemorrhagic in type or there may be serous effusion or purulent effusion resulting in empyematous conditions. Often it is a terminal condition.

Included are the usual symptoms of acute or insidious tuberculosis, and nearly always a variable amount of acute pain noticed most on deep respiration. There is cough which is often very distressing and painful. It tends to chronicity, and is often re-activated by a cold or other acute respiratory infection. In the wet forms aspiration of a small amount of fluid will often reveal bacilli on microscopical examination.

In dry pleurisy we notice an acute onset, usually with chills, fever, dyspnoea, and pains in the side of the chest. There is diminution of motility; percussion is often negative; auscultation, especially in the axillary region, will elicit a "pleural rub," the pain is sharp and lancinating, and there is invariably a non-productive cough. The pain is felt only superficially but often there are distinct tender points. In diaphragmatic forms there are no auscultatory signs as a rule, but the pain, due to the nerve connections, is referred to the neck and the crest of the shoulder. If the infection is along the border of the diaphragmatic pleura, the pain is found in the lower thorax and the upper abdomen. Much depends upon the associated history of onset.

"Interlobar pleurisies" are not usually diagnosticated by a friction rub, but there is a definite lessening of breath sounds in the region of the area of involvement, and there seems to be an immobilization of the lung above their point.

"Apical pleurisies" are far more common

*One of a series of lectures and demonstrations to a class of physicians in tuberculosis, held under auspices of the Health Bureau, Department of Public Welfare, Richmond, Va., February 15 to April 15, 1923.

than we have considered them previous to the use of the X-ray; almost always affected in lesions involving the upper lobes. The symptoms are the same as those of dry pleurisy, viz: mild fever, unproductive cough, pain, and loss of weight. On physical examination we find a friction rub, diminished breathing, cog-wheel breathing, and crepitations. Apical pleurisies are practically always associated with a parenchymatous involvement.

Pleurisy with effusion may be insidious, or acute, the symptoms are more or less those found in other forms with the exception of more dyspnoea, depending upon the amount of effusion. Physical examination shows enlargement of the affected side to bulging of the intercostal spaces, rigidity of the erector spinae muscles. There is a flat note on percussion, with a tympanitic note above the fluid line. The presence of adhesions may prevent the flat note appearing anteriorly and, if in sufficient amount, there is displacement of the viscera. Unless prevented by adhesions, the mediastinal contents will be displaced before the lung will become compressed. The course of pleurisies with effusion, if non-tuberculous, is of short duration, reabsorption being the rule. If tuberculous, they tend to chronicity. Tapping is of questionable value, for as Fishberg says: "While the effusion is in the diseased chest, the diseased lung, the tuberculous lesion is compressed; toxemia is thus prevented as in artifical pneumothorax." Often the effusion will absorb, but may go on for months or years. The patient improves rapidly upon absorption. The prognosis is more favorable in children than adults.

The treatment of pleurisies consists of rest in bed as long as there is an elevated temperature, avoidance of exposure, etc. Pleurisy jackets or adhesive strapping often helps. Belladonna plasters, painting with iodine, or some such local counter-irritant is efficacious. In the very acute forms morphia may be required to control the pain. The wet forms are subject to the same course of treatment. Aspiration should not be practiced, if possible to get relief otherwise. Autoserotherapy has been advocated, but is of doubtful value.

Tuberculosis of the peritoneum occurs more often than we have expected before, and is most commonly associated with disease in the intestines. It may be acute and miliary in form or chronic with fibrotic changes, and in some instances hemorrhagic or exudative. Many times it pursues its course without pain or particular symptoms. It is a fact that many abdomens are opened for exploration or specific surgery and the presence of tuberculous peritonitis found. On the exposure to air and again closing up the peritoneum the condition seems to clear up entirely. Numerous cases have given all the typical findings of an acute appendicitis, when on operation the appendix was found absolutely normal.

The symptomatology consists of abdominal pain, vomiting, diarrhoea, mild fever, loss of weight. There may be ascites and, if in sufficient amount, percussion may give its signs. Adhesions may account for apparent tumor masses. The treatment is that of general tuberculosis; pneumo-peritoneum may have some value, but surgical procedures are best let alone.

Complications of Tuberculosis

It is a more or less well established fact at the present time that tuberculosis is present in the parenchyma of the lung before it is evident in other organs, as the meninges, kidney, and larynx, any one of which may at any time take the ascendency. Though it is possible for it to be primary in other locations than the lung, it is usually, however, a complicating factor.

Lobar pneumonia and so-called tuberculous pneumonias often complicate phthisis. The symptoms are those of an acute pneumonia which does not clear up as rapidly as an uncomplicated one is expected to. Occasionally they are terminal.

Considering the alimentary tract, our attention is chiefly concerned with the intestines. Tuberculosis of the tonsils has been noted. It is rare, however, notwithstanding the fact that in most diseased tonsils removed, we find tubercle bacilli present.

Intestinal tuberculosis is most frequent in children. Infection probably takes place by the swallowing of sputum or through extension from the glandular or lung condition. In some it is traceable to the bovine variety of infection. It may be acute or insidious in form. The lesions are located chiefly in the ileum, caecum, or colon, and are characterized by ulceration, which may be slight or extensive. This may proceed to perforation, or heal with a variable amount of stenosis. Its symptoms are: emaciation, rise in temperature, persistent diarrhoea, which is amenable to active treatment but on discontinuing immediately reappears; it may be intermittent but persists over long periods. The stools are variable in

number, often as high as twenty a day, they are fetid, dark colored, at times containing sloughing from the bowel. There may be streaks of blood, but copious hemorrhage is not the rule. The emaciation proceeds rapidly with the diarrhoea. The X-ray in efficient hands often will reveal the ulcerations as filling defects and is a valuable adjunct to our diagnostic methods.

Treatment is doubtful; for most cases appear for treatment only after the disease has been allowed to progress to an advanced stage. Medical treatment consists of rest in bed, a very nutritious diet, easily digestible with little roughage that may irritate the mucosa. Intestinal antiseptics are of doubtful value, though combined with sedatives they are capable of relieving many of the disagreeable symptoms. In a certain type of case, resection of the bowel has been used with good results. The best results in this form as in all others are gained by early diagnosis and treatment. The violet ray has been of distinct advantage in many cases and real cures have been effected.

There is tenderness over the abdomen, colicky pains, and general gastro-intestinal upset, the diarrhoea may alternate with constipation. Occasionally there are tumor-like masses palpable in the abdomen, and always associated with the above symptoms are the other symptoms of pulmonary tuberculosis. There is nearly always a more or less extensive pulmonary involvement which is often active.

Tuberculosis of the brain and cord is most common in the young and as a terminal complication. The brain itself is not frequently affected, the most common point being the meninges. It may be insidious over several weeks' time, or may be acute and take on a miliary type. Occasionally in the chronic forms a meningo-encephalitis results with a hydro-cephalic onset. In those cases not in extremis, meningeal involvement should be considered when headaches—an uncommon tuberculous symptom—and vomiting of solids and liquids with nervousness and irritability are present. Various phenomena particularly referable to the brain and cord are noted in the course of the disease as; aphasia, photophobia, drowsiness, and even hemiplegia. Breathing is slowed and may become Cheyne-Stokes in type; the patient finally becomes involuntary and passes into coma and convulsions. In the very early stages of involvement the first symptoms may be the patient's loss of hopefulness. He takes no more interest in things about him and loses his usual optimism. Lumbar puncture may reveal a cloudy fluid, with an increased lymphocytosis and a high pressure. Repeated tapping relieves some of the symptoms but it is usually a terminal affair, the patient lasting only a few days to a few weeks.

Tuberculosis of the genito-urinary tract occurs rather infrequently, in females usually, between the ages of twenty to thirty years. It spreads by the blood stream, peritoneum, direct extension, coitus, and instrumentation. It may involve the parenchyma of the kidney only or extend to the ureter, bladder, or any of the connected organs, as the seminal vesicles, vas deferens, and epididymis.

The symptoms in the early stages are difficult to diagnose. The urinary findings most constant are pus cells, epithelium, albumin, and an acid reaction. The presence of tubercle bacilli may not be demonstrable on concentration of a catheterized specimen under the microscope, but injection into the guinea pig may prove a diagnosis. Hematuria is not a constant finding but occurs fairly often. There is impaired function of the affected kidney as demonstrated by the phenolsulphonphthalein test.

The usual symptoms are dull pains in the lumbar region, irregular fever, chills, loss of weight and appetite, the kidney may even be palpable. In the advanced stages we often have the conditions present in an advanced nephritis as oedema, anasarca, or even uraemia.

The treatment of this form of tuberculosis consists largely of the treatment in other forms in the earlier stages. A bland diet requiring the minimum of elimination on the part of the kidneys is essential; absolute rest in bed while there is an elevated temperature is important. Violet ray has been used. In the more advanced forms of renal tuberculosis surgical interference is often resorted to. It is stubborn at best and the sooner a diagnosis is made the better, for it is the earlier treatment that is most efficacious.

Laryngeal tuberculosis may be primary but is usually preceded by pulmonary disease. It occurs in from ten to fifty per cent of cases but is a serious factor in only a small number of cases. Males are the most often affected. Their occupational surroundings, abuse of tobacco and alcohol, likely being accountable for it. It consists in an infiltration of the vocal chords

with ulceration and sloughing. The aryepiglottidean folds and interarytenoid space is often involved.

The symptoms are often varied as to the location; those showing a lesion at the entrance to the larynx are more severe than those showing one inside the larynx. Hoarseness is present in varying degrees, from mild tiring of the voice to complete aphonia. There is a variable amount of pain which may be paroxysmal and severe. Dysphagia exists in variable degrees. Warm foods and solids are the hardest to pass. Loss of weight, elevated temperature, and the usual symptoms are present. Though some cases show no loss of weight, its course either acute or chronic, if it goes into ulceration and fibrous aphonia, may be permanent.

Treatment consists first in putting the larynx at rest; in the mild cases whispering may be allowed, but, if the oedema is marked and the hoarseness persistent, much better results are obtained with complete cessation of speech and the observance of the usual regimen for tuberculosis. The local treatment consists in cauterization and application of escharotics both of which are doubtful in value and only advisable in experienced hands. Lactic acid in solutions of fifty per cent strength is used by some but its use also is questionable. Solutions of twenty to twenty-five per cent argyrol are sometimes soothing and, in my experience, I have felt they have a psychic effect on the patient; their healing value is doubtful. Sprays of orthoform combined with menthol and chloroform often help, as do solutions of cocaine. Alcoholic injection into the superior laryngeal nerve in cases of severe dysphagia has been practised.

Appendicitis is a possible complication though the men doing the largest amount of tuberculosis work have had no particular success with surgical intervention; it usually occurs in the terminal stages and operation would not mean much to the patient. It is a fact that many appendices removed show the presence of tubercle bacilli. Its diagnosis is often difficult as there are numerous conditions simulating it.

Phlebitis and thrombosis occur usually in the terminal stages and usually in the femoral vein, though they are known in the jugular. The diagnosis is easy as the edema starts in one extremity and the usual signs of phlebitis are present. Purpura is observed most often in the terminal stages; superficial cold abscesses are rare.

Empyema occurs usually following a pneumonia and, if it is not infected with the tubercle bacilli, the prognosis is much better, but in the presence of the bacilli its eradication is long and tedious. Much has been done in recent years with rib resection to get dependent drainage and irrigation with Dakin's solution and weak solutions of iodine. In those cases supposed to be of a tuberculous nature, Beck's paste has been used to advantage, but it is a slow process. In the absence of adhesions much can be expected of the final reexpansion of the lung. Adhesions almost always complicate, and various methods have been advised for their destruction. Radical operations are to be avoided if possible. Permanent fistulas are the rule.

Spotaneous pneumothorax occurs in the healthy as well as in the tuberculous; however, the consensus of opinion is that the phenomenon is due to a tuberculous lesion of the pleura which ruptures, causing a rent in the pleura. It occurs most often in males. Sometimes there is no apparent exciting cause; in other cases, overexertion, coughing, and the like precipitate it; in some cases it is terminal. It may be complete or partial in the case of adhesions. Tuberculous disease of the lung is either present at the time or very often follows the spontaneous collapse. Cases have been known to go for years with a collapsed lung without serious symptoms at its onset or during its course.

The symptoms are acute distressing dyspnoea, cyanosis, rapid and very feeble pulse, coldness, perspiration; the expression is that of agony, prominent eyes and cyanotic lips, lowered temperature. Some cases terminate with this condition in profound shock, others gradually recover. There may be effusion of fluid in the pleural cavity. Physical signs show an immobilized side, percussion gives a hyperresonant note, shifting dulness is evidence of air and fluid in the pleural cavity. Metallic and amphoric notes are elicited, breath sounds are absent. The diagnosis is often difficult, depending usually upon the degree of collapse but, in the course of pulmonary tuberculosis, the sudden onset of dyspnoea, pain in the chest, and physical signs of pulmonary collapse, the diagnosis is comparatively easy. The tympanitic note depends upon the tension

of the air in the cavity, thus low tension may not give a tympanitic note at all.

In treating this condition, if it is mild, usually all that is needed is a hyperdermic injection of morphia, keep the patient quiet for several days and gradually allow him to go back to light exercise. In the very acute forms the treatment is urgent, a heart stimulant is necessary, and the usual procedures for shock. Thoracentesis is next to be performed; this may be repeated at intervals through the day when it becomes necessary. A cannula may be inserted and rubber tubing connected and immersed in water to form a water valve arrangement to prevent the return of air into the lung. In some cases even an increased pressure in the pleura may facilitate the healing process.

If the cases are not in danger, it may be advisable to allow the compression to remain and to institute artifical pneumothorax.

Influenza is a complication and some authors claim that they have seen few cases with symptoms of re-activation that were not due to the tuberculous process directly rather than to influenza. In the past epidemic there were without doubt many cases of influenza in tuberculous cases, but it is also true that without a doubt many of the deaths attributed to influenza were likely due to tuberculosis.

1110 *Capitol Street.*

THE PHYSICIAN'S SYMPATHY IS A PSYCHOLOGICAL REMEDY OF GREAT VALUE IN THE TREATMENT OF DISEASE.

By WILLIAM JOSEPH JONES, M. D., Crozet, Va.

In order to elucidate my subject, I shall briefly refer to two nerve trunks which originate in the brain, and are locatd one on either side of the spinal column. These two are one nerve, called the great sympathetic nerve. Within the sheath of this nerve are situated numerous enlargements which are named ganglia. These are composed of gray matter and are centers of nervous influences. The great sympathetic sends branches or filaments each to its fellow, above and below, to the spinal cord, which is an extension of the brain, and by plexal connections establishes communication with all the organs of the body. It is the greatest factor in motion as well as sensation, and without its mysterious influence there would be no harmony in the varied functions of organic life. When one organ is diseased or injured, the whole physical economy is in sympathy. In the healthful processes of the body there is sympathy everywhere, without which thinking, tasting, smelling, hearing, seeing, feeling, digestion, assimilation, and elimination could not go on in harmonious accord without disturbing elements. It might be that a traumatic or pathologic condition would cut off sympathy from the brain and produce a psychological disturbance causing hypochondria, dementia, or insanity. It might be that the fibers of the sympathetic which supply the heart would be injured or diseased so that accumulating toxins would clog the wheels of life, when abnormal circulation of the blood current with indescribable distress and fearful apprehensions would lead on slowly but surely to the cold, dark chambers where sleep the countless dead. All physical functions must have sympathy in order to perform without pain or friction the work that nature has assigned.

If the great sympathetic nerve, which contributes an influence as unknown and mysterious as spirit with spirit, becomes diseased or in any way disturbed, one can readily understand that there will be confusion in every organ and through organic disturbances inharmonious conditions would affect bone, sinew, and muscle.

These physical facts convey to our minds some sort of conception of the relations of human beings to one another. The physician in his special relation is pre-eminently one who must take into consideration not simply physical conditions but also mental and spiritual entities as matters of profound study, embracing the domains of psychology and religion in order to treat intelligently the varied aspects of personalities that will come under his observation; without such knowledge he would often find perplexities to obscure his intelligence and hinder his medical skill. The physician must be all things to all of his clientele. Of necessity he enters largely into the peculiar conditions and, indeed, the secrets of every family who claim him as physician and on whom they rely for psychological as well as physical healing. The soul of a man or a woman is often in greater need of treatment than the body and frequently the bodily ailment must be treated, if treated at all, through the mental and moral susceptibilities of the patient. The man who writes M. D. after

his name may have won the right to do so by hard mental work and may truly deserve the diploma which hangs on the wall of his office, yet he may be a professional failure at the bedside of the sick because he aims to practice only the science and art of medicine and does not put genuine humanity into his conduct.

There has been only one *Great* Physician since the world was inhabited. He combined the moral and physical. He touched the heart whenever he healed the pathological flesh. Hippocrates reached upward and forward when he founded in scientific truth and moral equity our great profession, which, since his time, has progressed to the wonderful skill and amazing success of this day and generation.

It may be that the large majority of medical men are not ready to acknowledge allegiance to the supremacy of spirituality or to psychological evolution rather than the product of a plasma passing through a tadpole existence to a state of apeism, through a missing link to that mysterious humanity which none of us comprehends. Nevertheless, there are some who forsake the comforts of christian civilization and bend every act of life in a sympathetic devotion to the uplift of humanity in the far-away territory of foreign superstition and ignorance. The scalpel and the hypodermic are means that often lead to the fountain of life from which flows the civilization of the Great Teacher and the truth that spans the ages of eternity. Our profession has reached not only high standards in skill and science but has also won an enviable place among the great and good who have devoted sacrificial labor with intensity of thought in investigation and experimentation along the lines of sympathy for suffering human beings, searching in the field of psychology as well as in the territory of science.

About forty years ago, I had a hurried morning call to visit a baby six or eight months old, said to be dangerously ill. It was the first child of one who had arrived at the mile post a few years after young maidenhood, when she married a widower of age and experience. On my arrival she met me at the door with the baby in her arms. Her first words were "Doctor, I fear that you cannot properly examine my baby." It was screaming and writhing as if in great pain. I said "I think I can. You sit down and calm yourself." She said that the baby would not leave her a minute and that it had suffered since midnight. I talked quietly and sympathetically to the mother. The baby watched me and listened. In ten minutes it had ceased screaming and writhing and, after permitting it to inspect me until I thought it was satisfied, I held out my hands. It came to me and nestled in my arms, the arms of a loving father. It was soon asleep and I delivered it to its mother. I held out my hand to say good-bye. The other words were, "Your baby is not sick and therefore does not require mdicine. It is now well. Do not forget what you have learned."

A young lady, past her teens, was suffering intensely. Her parents were considerate and did not call me until after the breakfast hour. I was ushered into her room and saw at once that this was a case of hysteria. I sat on a chair placed by her bedside for me. I did not ask to see her tongue, nor did I place my fingers on her wrist where the pulse was beating away her young but unhappy life. I preferred to talk to her and with her. I spent and hour or less with her. When I bade her goodbye, she thanked me for my visit, and said, "Doctor, I feel much better now. I am free from pain and think I can sleep. Come to see me again." I did go occasionally and had the pleasure of seeing her a useful and happy personality in her home and community.

Let us be careful to hold to the good things of the past. Sympathy helps the giver and the receiver and elucidates both the predicate and the subject.

It is good, by the use of your hypodermic, to relieve the intense pain of a boy who induced a colic by eating a cabbage stalk or a raw turnip. That case demands action rather than sympathy. In the practice of medicine there is as much use for sympathy as for the hypodermic syringe or the judicious application of mustard and hot water. Psychology has a place as important as drugs and instruments. Even the ignorant and wicked sometimes learn a lesson of wisdom and reform the conduct of life to conform to the standards of propriety and righteousness, and the good and skillful physician has credit in records of eternal justice. The highest ideals of physicians are not found in material values, but in psychological entities.

Correspondence.

Let's Get Together on the Roads.

The Plains, Va.,
November 9, 1923.

To the Editor:

Now that the Pay-as-you-go Plan has been adopted by a decisive majority of the voters, it behooves every one of us who loves Old Virginia to "bury the hatchet" and put his or her shoulder to the wheel and do our best to make a success of the adopted plan. *For it is the roads* after all *that we want*, much more than the success or failure of any particular plan.

And above all, let's discard at once the argument, all too frequently heard in the recent campaign, that "the good roads would not benefit anybody but tourists and joy riders."

In the first place, this is not an argument for the Pay-as-you-go Plan, or for any other plan of building roads; on the contrary it is an argument directly against building roads by any plan. In the second place, it isn't true and, as long as any considerable percentage of Virginians maintain this attitude toward roads, just so long will Virginia have to remain in the mud.

A recent copy of the *Southern Planter* contained a letter from a farmer in Louisa County, in which he complained that down there, there was a road being built that paralleled the C. & O. R. R. for most of its length. Then he asks the question, "How can a road that parallels a railroad possibly help the farmers?" and answers his own question by saying, "If we farmers need good roads at all, we need only a few miles on which to haul our produce to the railroad for shipment and not great stretches of road for tourists to joy-ride over."

Now if this gentleman would go up into Maryland or Pennsylvania and drive over some of the great highways leading west from Baltimore or Philadelphia to the far western borders of those States, the first thing with which he would probably be struck would be the large number of enormous trucks going into Baltimore or Philadelphia, some of them probably from 100 to 150 miles away, loaded down with corn and wheat, hogs, sheep and cattle, some with as many as five fat cattle aboard; in fact, transporting everything the farmer produces or consumes into or out of the Baltimore and Philadelphia markets. Then he would realize at once that these farmers are not "joy-riding" their hogs and cattle to market but are transporting them this way, over roads paralleling the railroads mind you, because it is cheaper transportatian than the railroad has been giving them.

What are the railroads going to do about this? Are they going to let their engines and rolling-stock lie idly on the siding and watch this business go by them? Not a bit of it! They are going to reduce their freight rates and get their share of the business, and *the farmer gets the benefit of the reduction.* Nor will the railroads be injured by it any more than have the Express Companies been injured by the Parcel Post. Honest competition injures nobody.

This is but one illustration of the many ways that the improved highways are benefiting the farmers in the states that have them.

Another argument too frequently heard is that "having always gotten along without the improved roads, we can continue to get along without them." So we can, but any of us who might be unfortunate enough to have a member of his family very ill, or to be suffering with a severe pain himself, and the doctor had to come horseback over miles of mud roads, or perhaps spend several hours prying his automobile out of a mud-hole with fence rails—I say, any one in this position would probably think that it was indeed a slow way to get along.

And so I might go on almost indefinitely multiplying arguments to illustrate how improved roads benefit not only the farmer, but the merchant, the doctor, "the butcher, the baker and the candlestick-maker," in short, every business man and woman, whoever or of whatever profession they may be. Yes, we need the through highways as well as the short by-ways and we need them for business transportation much more than for pleasure and comfort.

Furthermore, unless and until Virginia gets her farmers connected up with her markets by improved roads, her farmers will have to compete at a disadvantage with those of our neighboring states where they are already connected up.

And though many of us thought the Bond Issue Plan better than the Pay-as-you-go Plan, now that the latter has been adopted,

let's get together on it, stop talking so much, and go to work with all our might to get the roads built as rapidly as possible.

RICHARD MASON, M. D.

The Truth About Medicine

In addition to the articles enumerated in our letter of September 29th, the following have been accepted:

Cheplin's Biological Laboratories
Cheplin's B. Acidophilus Milk
Lederle Antitoxin Laboratories
Diphtheria Toxin Antitoxin Mixture (0.1 L+)—Lederle, 30 c.c. vials
H. K. Mulford Company
Diphtheria Antitoxin Standard—Mulford
Diphtheria Antitoxin Superconcentrated—Mulford
Parke, Davis & Company
Antidysenteric Serum—P. D. & Co.
Protein Extracts Diagnostic—P. D. & Co.
Colon Bacillus Protein Extract Diagnostic—P. D. & Co.
Gonococcus Protein Extract Diagnostic—P. D & Co.; Micrococcus Catarrhalis Protein Extract Diagnostic—P. D. & Co.; Pneumococcus, Type 1, Protein Extract Diagnostic—P. D. & Co.; Pneumococcus, Type II, Protein Extract Diagnostic—P. D. & Co.; Pneumococcus, Type III, Protein Extract Diagnostic—P. D. & Co.; Pseudodiphtheria Bacillus Protein Extract Diagnostic—P. D. & Co.; Staphylococcus Albus Protein Extract Diagnostic—P. D. & Co.; Staphylococcus Aureus Protein Extract Diagnostic—P. D. & Co.; Staphylococcus Citreus Protein Extract Diagnostic—P. D. & Co.; Typhoid Bacillus Protein Extract Diagnostic—P. D. & Co.
Silver Nitrate in Capsules—P. D. & Co.

NEW AND NONOFFICIAL REMEDIES.

New Tuberculin B. E. Dried.—To obtain this product, tubercle bacilli are dried, ground for several months in a ball mill, the finely disintegrated bacillary bodies are mixed with a suitable base and made into tablets. Each tablet represents a definite amount of New Tuberculin B. E. Dried.

Tablets Tuberculin B. E.—P. D. & Co.—New Tuberculin B. E. Dried, marketed in vials No. 1 of ten tablets, each tablet containing 0.0001 mg.; in vials No. 2 of ten tablets, each tablet containing 0.001 mg.; in vials No. 3 of ten tablets, each tablet containing 0.01 mg.; in vials No. 4 of ten tablets, each tablet containing 0.1 mg.; in vials No. 5 of ten tablets, each tablet containing 1 mg.; also marketed in packages of 5 vials, Nos. 1, 2, 3, 4 and 5 inclusive. Parke, Davis & Co., Detroit.

New Tuberculin T. R. Dried—The mass culture of tubercle bacteria is washed repeatedly, agitated again in water, washed, ground to complete disintegration, extracted repeatedly with water, and the water insoluble material, instead of being ground to form a suspension in water as in New Tuberculin T. R. Liquid, is dried. The dried material is thoroughly mixed with a suitable diluent. Each tablet represents a definite amount of dried tubercle bacilli.

Tablets Tuberculin T. R.—P. D. & Co.—New Tuberculin T. R. Dried, marketed in vials No. 1 of ten tablets, each tablet containing 0.0001 mg.; in vials No. 2 of ten tablets, each tablet containing 0.001 mg.; in vials No. 3 of ten tablets, each tablet containing 0.01 mg.; in vials No. 4 of ten tablets, each containing 0.1 mg.; in vials No. 5 of ten tablets, each tablet containing 1 mg.; also marketed in packages of five vials, Nos. 1, 2, 3, 4 and 5, inclusive. Parke, Davis & Co., Detroit. (Jour. A. M. A., Oct. 6, 1923, p. 1207).

Sal-Ethyl.—A brand of ethyl salicylate—N. N. R. For a discussion of the actions, uses and dosage of ethyl salicylate, see New and Nonofficial Remedies, 1923, p. 272. Sal-Ethyl is supplied in the form of Sal-Ethyl Capsules, 5 minims. Parke, Davis & Co., Detroit. (Jour. A. M. A., Oct. 13, 1923, p. 1285).

Antidysenteric Serum—P. D. & Co.—An antidysenteric serum (see New and Nonofficial Remedies, 1923, p. 287), obtained from horses immunized against several strains of Shiga and Flexner Types of dysentery bacilli. It is marketed in packages of one syringe containing 10 c.c.; in packages of one vial containing 10 c.c.; in packages of one vial containing 20 c.c. Parke, Davis & Co., Detroit. (Jour. A. M A., Oct 20, 1923, p. 1363).

Cheplin's B. Acidophilus Milk.—A milk culture of bacillus acidophilus, containing not less than fifty million of viable B. acidophilus per c.c. at the time of sale. For a discussion of the actions and uses of bacillus acidophilus milk, see Lactic Acid-Producing Organisms and Preparations (Jour. A. M. A., Sept. 8, 1923, p. 831). For adults the dose is from 500 c.c. to 1,000 c.c. Cheplin's B. Acidophilus Milk is marketed in bottles containing respectively 200 c.c. and 400 c.c. Cheplin Biological Laboratories, Inc., Syracuse, N. Y.

Diphtheria Antitoxin Standard (Purified and Concentrated Globulin).—Formerly marketed as diphtheria antitoxin concentrated (globulin). (See New and Nonofficial Remedies, 1923, p. 283). This brand of diphtheria antitoxin concentrated is also marketed in packages of one syringe containing 20,000 units. H. K. Mulford Company, Philadelphia.

Diphtheria Antitoxin Superconcentrated.—The product resembles serum antidiphthericum purificatum U. S. P. It differs in that the volume per thousand units is smaller, and the protein content is claimed to be lower. It is marketed in packages of one syringe containing respectively 1,000 units, 3,000 units, 5,000 units, 10,000 units and 20,000 units. H. K. Mulford Co., Philadelphia.

PROPAGANDA FOR REFORM.

Colorless Iodin Preparations.—The so-called colorless iodin preparations do not contain iodin in the free state, but some form of combined iodin, chiefly iodid. For instance, Tinctura Iodi Decolorata, N. F., is a solution of sodium iodid and ammonium iodid obtained by mixing iodin and sodium thiosulphate, stronger ammonia water and alcohol. When tincture of iodin is used externally, it is with the view of obtaining the therapeutic action of free iodin. Since the colorless iodin preparations do not contain free iodin, their external use as a substitute for tincture of iodin is irrational. When tincture of iodin is given internally, the free iodin contained in it is converted into iodid before absorption. Therefore, tincture of iodin and the so-called colorless iodin preparations given internally have essentially the same therapeutic effect. However, if a colorless iodin preparation is to be administered, it would be simpler and more rational to administer sodium iodid. (Jour. A. M. A., Oct. 20, 1923, p. 1383).

The Action of Arsenicals in the Body.—Voegtlin and his associates, in the Hygienic Laboratory of the U. S. Public Health Service, have observed that certain compounds containing sulphur groups in the SH form are able to counteract the toxic effects

produced by arsenoxid on trypanosomes and a representative mammal. They advance the theory that arsenic in certain trivalent forms is a specific poison for the SH group in the trypanosome organism, and that arsenic causes death of the cells by interfering with the oxidative processes. Voegtlin and his associates concluded that the failures reported in the treatment of the later stages of syphilis are due to the fact that arsphenamin, neoarsphenamin and silver arsphenamin lack the essential penetrative power for the infected tissues, and for this reason, they do not reach the last parasites in sufficient amounts to cause their death. In the effort to secure a more complete sterilization of syphilitic patients in the more advanced stages of the disease, sulpharsphenamin, tryparsamid and 3-amino-4 oxyphenol arsonic acid are suggested for trial as remedies of superior penetrative power. (Jour. A. M. A. Oct. 27, 1923, p. 1442).

Van Ess.—The Van Ess Laboratories, Inc., Chicago, put out "Van Ess Special Dandruff Massage" and "Van Ess Liquid Scalp Massage." "Van Ess" is sold with the claims that it will make hair grow and that it will stop falling hair in two weeks. The A. M. A. Chemical Laboratory reports that Van Ess Special Dandruff Massage is a perfumed liquid which separates into two layers on standing. The upper layer consists essentially of a petroleum oil which appears to be kerosene. The lower layer appears to be composed of water and alcohol containing small amounts of quinin sulphate, coloring matter and perfume. The laboratory concludes that it is probable that a mixture of 35 parts of kerosene, 15 parts of alcohol denatured by the addition of 2 grains of quinin sulphate per fluid ounce and 50 parts of water would have whatever therapeutic properties the Van Ess Special Dandruff Message possesses. (Jour. A. M. A., Oct. 27, 1923, p. 1461).

Book Announcements

A Practical Text-Book of Infection, Immunity and Biologic Therapy. With Special Reference to Immunologic Technic. By JOHN A. KOLMER, M. D., Dr. P.H., D.Sc (Hon.) Professor of Pathology and Bacteriology in the Graduate School of Medicine, University of Pennsylvania; Member of the Research Institute of Cutaneous Medicine, Philadelphia. With an introduction by ALLEN J. SMITH, M. D., Sc.D., LL.D., Professof Pathology in School of Medicine, University of Pennsylvania. Third Edition, Thoroughly Revised and Mostly Rewritten. 8vo. of 1210 pages containing 202 original illustrations, 51 in colors. Philadelphia and London. W. B. Saunders Company. 1923. Cloth, price $12.00 net.

The Care of the Baby. A Manual for Mothers and Nurses, containing Practical Directions for the Management of Infancy and Childhood in Health and Disease. By J. P. CROZER GRIFFITH, M. D., Professor of Pediatrics, University of Pennsylvania; Physician to the Children's Hospital, etc. Seventh Edition, Thoroughly Revised. Philadelphia and London. W. B. Saunders Company. 1923. Cloth, $2.50 net.

Diseases of the Skin. By RICHARD L. SUTTON, M. D., LL.D., Professor of Diseases of the Skin, University of Kansas School of Medicine; Former Chairman of the Dermatological Section of the American Medical Association; etc. Fifth Edition, Revised and Enlarged. C. V. Mosby Company. St. Louis. 1923. 8vo. 1214 pages with 1069 illustrations and 11 colored plates. Cloth, $10.00.

An Introduction to the Study of Mental Disorders. By FRANCIS M. BARNES, JR., M. A., M. D., Associate Professor of Nervous and Mental Diseases, St. Louis University Medical School; Consultant Neuropsychiatrist to U. S. Veterans' Bureau Ninth District, St. Louis, etc. Second Edition. St. Louis. C. V. Mosby Company. 1923. 8vo. 295 pages. Cloth, price $3.75.

Diagnostic Methods. A Guide for History Taking, Making Routine Physical Examinations and the Usual Laboratory Tests Necessary for Students in Clinical Pathology, Hospital Internes, and Practicing Physicians By HERBERT THOMAS BROOKS, A. B., M. D., F. A. C. P., Professor of Clinical Medicine, College of Medical Evangelists, Los Angeles, Cal.; Formerly Professor of Pathology, College of Medicine, University of Tennessee, Memphis. Fourth Edition. St. Louis. C. V. Mosby Company. 1923. 8vo. 109 pages with fifty-two illustrations. Cloth, price $1.75.

Alcohol and Prohibition in Their Relation to Civilization and the Art of Living. By VICTOR G. VECKI, M. D., San Francisco, California. Philadelphia and London. J. B. Lippincott Company. 12mo. 165 pages. Cloth, price $2.00.

Rhus Dermatitis. From Rhus Toxicodendron, Radicans and Diversiloba. **(Poison Ivy).** Its Pathology and Chemotherapy. By JAMES B. McNAIR. The University of Chicago Press, Chicago, Illinois. 8vo. 298 pages. Cloth.

Public Health Exhibit in New York.

Early in November there was held in New York City a public health exhibit, demonstrating the facilities available at marine hospitals and other relief stations for the medical and hospital care and treatment of beneficiaries of the Public Health Service. The exhibit occupied eight booths and covered about 800 square feet of floor space. It showed a complete surgical operating suite; a dental operating suite; a modern X-ray machine which was operated for the benefit of visitors; a suite showing modern equipment for physio- and hydrotherapy; an ambulance; a model ship's medicine chest and the operation of the medical-advice-by-radio service. The exhibit was given by the the U. S. Public Health Service in co-operation with the American Marine Association.

Have you looked over the advertisements this month? If not, please do so before putting down your journal. Mention this journal in writing them.

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Editorial

Heart Disease In Early Life.

This is a national question. It is closely related to public health of young citizens. It is a companion problem of rheumatic infection of youth. Can we not agree that rheumatic infection is due to a specific organism, streptococcus? For the past twenty years the bacterial origin of rheumatic fever has been under question, but now it seems quite clear, after widespread investigation and after proceeding to the conclusion with proper scientific caution, that we may conclude that the bacterial cause of rheumatic infection, as shown in articulations of bones, is also the cause of acute heart disease, and that the crippled heart results thereform. Primary attacks of endocarditis can usually be traced to tonsil infection, and chronic heart lesions follow.

Allen, at Glasgow, emphasizes the magnitude of the problem by citing the following facts: "in 1921, 53,710, or 11.7 per cent of deaths at all ages and from all causes in England and Wales were due to heart disease, and this did not include disease of blood vessels." Rheumatism accounted for about one-half to one-third of the deaths due to heart disease in the wards of a general hospital. He cites America on this point and says that 11 per cent of the total deaths were due to heart disease. An examination of 198,304 children in eight schools of Glasgow showed that about .6 per cent had organic heart disease. Taking Great Britain, Allen estimates that there are from 40,000 to 50,000 children of school age who have organic heart disease.

The Saturday Morning Child's Clinic by Family Doctor.

In view of the well known widespread prevalence of rheumatic infection among children at the school age and in view of the great necessity for the early discovery of the causative factor, it would seem wise, in addition to the routine examinations made at the schools by the school physicians, that children be sent periodically on Saturday mornings to the office of the family physician for careful inspection and study as to possible infection of the nose, throat and teeth, or the possible presence of evidences in the body of rheumatic infection or the determination of cardiac lesions. As a result of such diagnostic inquiry, should positive signs be found, at once, by a sympathetic agent, the family doctor, proper measures might be undertaken for the correction of infections and for careful instructions in the case of the crippled heart.

The Bacteria.

1. Streptococci
   - S. hemolyticus
   - S. viridans
   - S. rheumaticus
   - S. mucosus, etc.
2. Pneumococci
3. Staphylococci Aureus and albus
4. Meningococci
5. Tubercle bacilli
6. Colon bacilli
7. Diphtheria bacilli and others.

Bacterial Victim.

The Result.

Tonsillitis	Thyroiditis
Rheumatic fever	Iritis
Endocarditis	Erythema nodosum
Myocarditis	Herpes
Pericarditis	Meningitis
Acute chorea	Tuberculosis and others.
	Death often results.

The Family Physician's Training.

For this service, probably a brief course of study on the part of the family doctor may be in order. He may need just a little brushing

*Copy of photo in Hare's Practical Diagnosis.

up for his child's clinic in the matter of examination of the child's nose and throat. He will need a winning smile, an air of friendliness, a presence of gentleness. He will need a head mirror and a tongue depressor. He will require, it may be, a retractor or some instrument to make some pressure on the tonsils. He will need a hand mirror to reflect light, and a nose speculum. He will need a stethoscope. He will need a clinical thermometer. He should weigh his patient; he should examine the heart carefully, before and after exercise. He should examine the lungs and also the urine. Were such a simple clinical study of children followed by intelligent family physicians at Saturday clinics, much sickness and suffering might be prevented, and particularly in the field of rheumatic infections.

Such a plan, of course, can only be useful if the general practitioner takes seriously the examinations of such children. Surely it is easy of operation; on every country side, in every town and city throughout the land, an office clinic for school children could be held at a Saturday morning hour when children are free from school duties and transportation by automobile easily obtainable. This could be agreed upon by the doctor, the parents and the children. Such a method of periodic study of children would do much to ward off impending systemic infections and to prevent chronic heart maladies of later life.

Early Symptoms and the General Practitioner.

Sir James Mackenzie is emphasizing a newer and finer insight into the primary manifestations of disease. Under this system of approach in the study of ill health, the recognition of dysfunction in its initial forms is demanded. The interpretation of the full significance of beginning symptomatology is needed in modern medicine. The old habits of mental analysis must be reformed and a keener sense of the real meaning of apparently insignificant physical disturbances is needed by general practitioners as well as specialists. The time-worn descriptions of diseases, useful and important as these have been and are, must be given a less important place in medical literature. Text books and much current literature have dealt with descriptions of disease, as displayed in the late, terminal, and often irremediable and fatal stages. This is illustrated in the description of the signs and symptoms of chronic tuberculosis in the human body; in the all but moribund state of Bright's disease; and in the gross and late signs of heart disease, as shown in such phenomena as cough, dyspnoea, hemorrhage, oedema, dropsy, *et cetera.*

The new movement, championed by Mackenzie, would bestir the general practitioner to an understanding and study of disease in its very beginnings; to cultivate a mental acumen for a more accurate sensing of the oncoming malady by a true interpretation of the earliest disturbances. Every disease must display or give evidence of its presence in the initial stage. In this great threshold of disease, knowledge of vast importance awaits alert medical appreciation. The general practitioner of medicine may find most satisfying efforts here. For it must be granted, that much of the present day abundant surgical pathology in man is, or may be, explained by the failure of the medicine of the past to early understand the significance of beginning ill health. For instance the understanding of focal infections may serve to prevent the gastric ulcers, the infected gall bladders, the pyelitis, and other pathological states that the drainage and removal procedure of modern surgery so excellently handles. The same may be said of beginning gastric disturbances as has been said so well by surgeons, themselves, of early cancer.

But this is not alone a problem for the physician. The layman necessarily must participate largely as a factor in this stage of medical progress. Simultaneously with improvement in the acumen of the physician for the beginnings of disease must come an education of the public in the fundamentals of ill health and its early manifestations. Many laymen live the "dyspeptic life" and do not believe the distress from indigestion to be anything but "normal" to man. So insidious and stealthy have been the onward movements of symptomatology in such cases, such persons have not felt the significance of the dysfunctioning stomach nor thought of these signs as harbingers of gross pathological processes which may finally require surgical intervention.

Again, many a layman does not understand the significance of the periodic headache, the dimness of the vision, sense of bodily tension, the forceful heart beats, the slight

dyspnoea on slight exertion, often felt in the fifth decade: these individuals feel that these slight disturbances are "natural" at the age. Again, many women have signs of incipient and beginning hyperthyroidism which may escape notice in the remedial stage.

So it is easy to see that while the profession needs and must acquire a rather keener sense for the understanding of the symptoms of ill health in its earliest stages, the more essential and more fundamental movement in this direction must be made in the minds of the people themselves. This reduces the matter to that well understood, but rather poorly accomplished public need of a nation-wide publicity as to the nature and early manifestations of diseases as we find them in this country.

While organized medicine and public health bodies may back such a movement, it would seem that the public press under skilled and intelligent direction, both by governmental agencies and professional organizations, would be more potent in propagating an understanding of this public need.

From the standpoint of Sir James Mackenzie's principles of symptomatology, the problem relates to physicians and the following quotations may be given to indicate the points he endeavors to sustain:*

"A great deal of time and labor is spent on getting records, and an enormous mass has been accumulated. Everyone recognizes that they should be of inestimable value, but somehow or other the good results are never commensurate either with expectations or with the labor spent. If one asks a physician or surgeon what use he makes of the records of his predecessors, who it may be, for a quarter of a century, had been piling them up, he will reply that nobody ever looks at them! This fact has been recognized, and strenuous attempts are being made to remedy this state of affairs. But there is little prospect of success so long as we remain ignorant of the phenomena of ill-health. The most favored method today is to have each patient examined by a great many specialists. Each specialist may find something wrong, and all their findings are carefully recorded. But such records are of little help, as they do not tell us the outcome of the complaint. This is recognized in some quarters, and the patients are to be 'followed up.' But what is it that should be watched in the following up, and which of the specialists is to do it? The object is to note the modification in the symptoms with the progress of the disease, but in the present state of knowledge of the nature of symptoms, only a very imperfect or useless record can be kept."

* * *

"Large numbers of perfectly healthy people are rejected for life insurance, and for entrance into the Services, have their lives restricted, and are subjected to various forms of treatment, because some sign as a murmur or an irregularity of the heart is detected. Modern medicine is developing along new lines, in which numbers of specialists are combining to make a more thorough examination of each patient. That each specialist may frequently find symptoms belonging to his special department is to be expected, seeing that in a sick man every organ may be disturbed. But if each or all of them is asked what is the nature of the ill-health which is provoked by the disturbance, no clear information can be obtained. That does not mean that each specialist may not do good by his treatment, or that such a combination may not be successful, but the point is that there is not that knowledge which enables the specialist to understand the relation of the disturbance which he detects with ill-health, and in consequence of the absence of this knowledge he is forced to treat patients whose sufferings cannot be relieved on the same lines as those who can be relieved."

* * *

"Many examples of the evil effects of specialism in the practice of medicine could be cited, and the following may be taken as an example. A problem which is ever cropping up in general practice is how to deal with patients with affections of the heart who become pregnant. A perusal of recent obstetric books shows that the writers have so imperfect a knowledge of this subject that their opinions are of little value. The heart specialist has never had the opportunity of studying the effect of pregnancy in either the normal or diseased heart. The absence of this kind of knowledge often has calamitous results."

* * *

"The recognition that there is an urgent need for a new outlook in medicine is not the result of a superficial view or of a hasty survey. It is forty-four years since I entered upon the practice of medicine as a general practitioner. After a few years it gradually dawned upon me that I was profoundly ignorant of the nature of the complaints for which I was consulted. If a patient had a pain I might be able to give relief, but when I asked myself how was the pain produced and how my remedy acted, I had to admit I did not know. When I detected in a patient a murmur in the heart, or an irregularity in its action, I looked upon these as signs of serious significance and proceeded to treat them according to the fashion of the day. But when I asked myself in what way they indicated danger, I could not tell. The same blank ignorance faced me when I looked closely into nearly every form of complaint—whether trivial or serious. At first I thought my ignorance was peculiar to myself, but I soon found that neither the consultants to whom I brought my patients, nor the books I read, could give me the kind of knowledge I wanted.

"I therefore resolved forty years ago to improve my own knowledge, and for that purpose I set myself two objects—(1) to find out the nature and mechanism of individual symptoms, and (2) to find the bearing the cause of the symptom had on the patient's health in the present and in the future. From that time onward I have steadily pursued this inquiry. Needless to say, progress has been slow and difficult. One great obstacle was my profound ignorance of the manner in which the functions of the body were carried on. In striving to remove this ignorance, I discovered that the knowledge essential to the attainment of my object in many instances did not exist, and I had to devise measures to get this knowledge. Many were the failures, but gradually a measure of success was achieved. I kept reviewing the steps I had taken, and studied the reasons of success to find the reason for the failures, till

*Sir J. Machenzie, Lancet, November 3, 1923, pages 964-5.

I finally was able to understand the reason for the slow progress of medicine in dealing with the ill-health common among the people, and recognized a great field of investigation which had been neglected, but which is absolutely essential for the progress of medicine and its intelligent practice."

Surgery and Physiology, or the Surgeon as a Physiologist.

No longer does surgery lean alone upon anatomy as its main support. The saying that anatomy is the sole basis of surgery must, in present times, be modified. An accurate knowledge of anatomy is no less essential to the art of surgery than heretofore; the manual work of the surgeon, the technique of the operation, as applied to the anatomy of the patient, is just as important as ever. Modern surgery is no longer considered a mere mechanical art, although the mechanical and physical alterations of the anatomical structures, incident to operative procedures, as well as the dangers involved in such, have a fundamentally important place in the surgeon's work. In the work of Dr. Crile, at Cleveland, and in his splendid contributions to the science of surgery we have an illustration of the point under comment. A skilful manipulation and readjustment of anatomical structures, during the process of surgical operations, call for a special knowledge of anatomy. But the more advanced improvements in surgical problems and surgical methods are found in the adjustment of the body, subjected to changes resulting from surgical interventions to a newer consideration for function or physiology.

So today, surgeons are thinking more in terms of physiology. Many modern surgeons, both in this country and abroad, having accomplished a high standard of skill in technique of operative procedures, are turning from problems of dissection to problems of physiology. Many are becoming earnest physiologists. In this way physiology is becoming an aid to better surgery.

The Clock of Life is wound but once
And no man has the power
To tell just when the hands will stop—
At late or early hour.
Now is the only time you own;
Live, Love, Toil, with a will;
Place no faith in "Tomorrow," for
The Clock may then be still.

News Notes

Christmas Greetings and Best Wishes for a Happy and Prosperous 1924 to all our Readers

Medical Activities In Wise County, Virginia.

The Daily Progress, of Norton, Va., in a recent issue featuring the Appalachian National Park, tells much of the progress in all lines of work in the southwestern section of the State. It is pleasure to note that the medical profession is no laggard in successes being attained there. It is stated that Wise County "has grown in thirty years from the poorest and one of the least known, in the State, to the richest and one of the most progressive."

A Health Department was established in Wise County in 1917, which employed a health officer for his whole time, until his activities were terminated by his entering the World War. Later, the full work of the Department was resumed and a venereal disease clinic was also established. Dr. W. R. Culbertson is now health officer of Wise County and, under his administration, a great deal of excellent health work is being done in this county.

Norton has also one of the best hospitals of the southwestern section. It was established about three years ago and is a 30-room hospital with X-ray and all other modern apparatus. The staff includes Dr. J. A. McGuire and Dr. G. B. Setzler, of Norton, and Dr. J. Francke Fox and Dr. W. H. St. Clair, of Bluefield, W. Va.

Richmond Academy of Medicine and Surgery.

At the meeting of the Academy, held November 27th, a new Constitution and By-Laws were unanimously adopted. The essential features in these were that the Richmond Academy of Medicine and Surgery should hereafter be designated as the Richmond Academy of Medicine and that the business and scientific work of the Academy would be divorced, the business activities being put under charge of a body of trustees consisting of the encumbent president and the four former latest presidents of the Academy, and that the scientific program should be delegated to a committee of three who, with the president and the board of trustees, would formulate the scientific work of the Academy during each year. This departure is considered a conser-

vative one and for the best interests of the Academy as a whole. Final action on all important measures affecting the interests of the Academy will be left to the membership for ultimate action. This reorganization of the Academy and its methods and activities is in line with the progressiveness of the profession, will be constructive, and of great benefit in furthering the scientific interests of the members, and will give them a better opportunity for serious minded scientific work. The offices of secretary and treasurer are to be combined.

During the past year, the work of the Academy has been of an unusually high character and there has been a personal enthusiasm and unity of action that has been most helpful.

Another Virginia Member, American College of Surgeons.

In our November issue, in giving names of Virginia surgeons elected to fellowship in the American College of Surgeons, at its recent meeting in Chicago, we failed to include the name of Dr. George W. McAllister, of Hampton. We regret the omission, which was brought to our attention by a friend of Dr. McAllister's. This makes a total of six from Virginia elected to followship in the College this year.

The Johnston-Willis Hospital

Has moved into their handsome and thoroughly modern new building at Kensington and Colonial Avenues, Richmond. The formal opening was held on December 10th.

The hospital had outgrown its old quarters on Franklin at Sixth Street, where it has been operating since its foundation in 1909 by Drs. George Ben Johnston and A. Murat Willis, and their associates, for the accomodation of their private patients.

The new location is particularly attractive, overlooking as it does the grounds of Battle Abbey and having spacious grounds of its own. The building is 165 feet by 40 feet, is six stories with a tiled roof garden. There are accommodations for 125 patients, with telephone service in each private room. The construction is strictly fire-proof, being reinforced concrete frame, brick and stone exterior, partitions of hollow tile and terrazza floors. The hospital is complete in every respect; each department has been carefully arranged for convenience of patients, doctors and nurses, and the most modern equipment is installed throughout. The operating suite contains three operating rooms and other rooms for special surgical examinations and treatments. The X-ray laboratory has spacious quarters and is equipped with the most modern and approved apparatus for diagnostic and therapeutic work, including a powerful, high voltage machine for deep therapy administration. Portable apparatus is also provided for bedside work and study of special cases during operation. The hospital possesses an amount of radium adequate for any purpose for which this element is indicated as a therapeutic agent. The provisions for the care of maternity cases includes a modern delivery-room and nursery; the facilities for the care of new-born infants have been worked out and completed in detail.

The clinical laboratory is complete and includes electro-cardiographic and basal metabolic units. It is possible to take electrocardiographs on any floor or room in the hospital. Ample quarters are provided for hydrotherapy. A special feature of the culinary department is a complete cafeteria system for the nurses and doctors. This is an innovation in this city, but has proved highly satisfactory in some of the other more modern hospitals elsewhere. There is a complete refrigerating plant which, besides cold storage, provides ice and cold water throughout the building.

There are a number of rooms with private baths and each floor has a sun-parlor. In addition, a spacious sun-parlor on the roof opens on the tiled roof garden, which commands a beautiful view of the city. This feature is particularly attractive for convalescent patients. Here they can enjoy the open air and sunshine and can see their friends in homelike surroundings. Visiting physicians are invited to inspect the hospital at any time.

The McGuire Clinic.

The McGuire Clinic in conjunction with St. Luke's Hospital opened its doors December the first. The Clinic Building, which is connected with every floor of the hospital, has practically been rebuilt from basement to roof and supplied with all the facilities of a large modern professional office building.

The Department of Surgery, Gynecology and Urology will be under Dr. Stuart McGuire, Dr. W. Lowndes Peple, Dr. R. C. Fravel and Dr. Beverly F. Eckles. The Department of Orthopedic Surgery will be under Dr. W. T.

Graham. The Department of Internal Medicine will be under Dr. Garnett Nelson and Dr. Hunter H. McGuire. The Department of Pathology and Radium Therapy will be under Dr. S. W. Budd. The Department of Roentgenology will be under Dr. A. L. Gray and Dr. J. L. Tabb. The Department of Ophthalmology, Otolaryngology and Rhinology will be under Dr. W. R. Weisiger. The Department of Dentistry will be under Dr. John Bell Williams and Dr. Guy R. Harrison. The Department of Obstetrics will be under Dr. Virginius Harrison. The Business Manager will be Mr. G. H. Winfrey, former Secretary and Treasurer of the Medical Society of Virginia.

The Department of Roentgenology under Dr. Gray and Dr. Tabb will be equipped with the latest improved X-ray apparatus for X-ray diagnosis and the latest model machine for administering the high voltage X-ray treatment. This deep therapy apparatus promises much in reaching the more deeply seated malignant conditions hitherto inaccessible.

The Radium Laboratory under Dr. Budd has an adequate supply of radium to meet all needs. It will be used in connection with Surgery and Roentgenology in the treatment of many of the cases of malignancy as well as other pathological conditions.

The Department of Medicine, under Dr. Nelson and Dr. Hunter McGuire, is equipped with a new electro-cardiographic apparatus, an alpine light, an apparatus for estimating basal metabolism, and all other equipment needed in the diagnosis and treatment of medical diseases.

With a virtually new office building in intimate connection with an established hospital, with new equipment and a staff of men experienced in their several specialties, the organization should be a great success.

New Superintendent at Stuart Circle Hospital.

Miss Charlotte Pfeiffer has been elected by the Board of Directors as Superintendent of the Stuart Circle Hospital, Richmond, to succeed Miss R. Z. Van Vort. Miss Pfeiffer arrived in Richmond December 1st and will assume charge of the Hospital on December 16th. She comes on the recommendation of Dr. A. R. Warner, Executive Secretary of the American Hospital Association. The Stuart Circle Hospital has always enjoyed a high rating with the American Hospital Association and with the American College of Surgeons and, when the necessity for finding a successor to Miss Van Vort arose, Dr. Warner was consulted and as a result of this correspondence Miss Pfeiffer was recommended. She has visited Richmond for conference and is enthusiastic about her new work.

Miss Pfeiffer's first connection with hospital work was as Deaconess in the Lutheran Church. She thus entered on her work as a life of service, and has served in all capacities in hospital work. She has taken courses in home economics, has done social service work, especially in organization, and did field work under the direction of United Charities in Chicago. She took the post-graduate executive course in the Illinois Training School in 1920 and a post graduate course in practical hospital administration at the Bridgeport Hospital, Connecticut. For the past four years she has been principal of the school of nursing at the Deaconess Hospital in Milwaukee, where she made notable success. She enters on her work in Richmond with a broad training and a successful practical experience, and with ideals and a vision that peculiarly fit her to carry on the work at Stuart Circle Hospital.

Married.

Dr. Joseph Thompson McKinney and Miss Ruth Markley, both of Roanoke, Va., November 14.

Dr. William Percy Jones and Miss Eliza Palmer, both of Urbanna, Va., the latter part of October.

Dr. R. L. Hudnall, Beverlyville, Va., and Miss Mary E. Robertson, Heathsville, Va., November 7, in Baltimore, Md.

Dr. Harry B. Sanford and Miss Alice Smith, both of Richmond, Va., November 14.

Dr. Powell Garland Dillard, Lynchburg, Va., and Miss Nannie Sue Hoge, of Pembroke, Va., November 20.

Dr. John W. Turman, Richmond, Va., and Mrs. Dell Williams Peoples, Warrenton, N. C., October 27.

The Petersburg Medical Faculty,

At its annual meeting on November 22, elected Dr. D. D. Willcox president; Drs. J. R. Beckwith and E. W. Young vice-presidents; Dr. C. M. McCuiston corresponding secretary; and re-elected Dr. J. M. Harwood secretary-treasurer. All are of Petersburg. Drs. J. Bolling Jones and Fletcher J. Wright were appointed to arrange for the annual meeting

of the Southside Virginia Medical Association, which was held in that city on December 11th.

Arlington County Medical Society.

At the regular meeting of this Society, held November 7th, Dr. Stacy T. Noland, Clarendon, was elected president, and Dr. B. H. Swain, Ballston, was re-elected secretary-treasurer. The Society decided that, instead of meeting quarterly as hertofore, they would hold meetings only twice a year—on the first Wednesdays in May and November.

The Augusta County Medical Association

Held its regular tri-monthly meeting in Staunton, November 7. Present officers of the Association are: President, Dr. Alex. F. Robertson, Jr., Staunton; vice-presidents, Drs. F. E. Hamlin, Staunton (at present in Philadelphia taking post-graduate work), T. W. Hankins, Fordwick, and H. F. White, Fishersville; secretary, Dr. H. G. Middlekauff, Weyers Cave; treasurer, Dr. J. L. Alexander, Staunton. Meetings are held quarterly.

Clinic for Crippled Children.

Dr. William Tate Graham, orthopedic specialist of Richmond, held a clinic at Courtland, Va., November 24, by special request of the Red Cross Chapter and Board of Public Welfare of Southampton County. He examined about twenty-five children and suggested that hospital treatment should be helpful to several. He was assisted in the work at the clinic by Dr. W. T. McLemore, chairman of the Red Cross Nursing Committee, Miss Mary L. Babb, Red Cross secretary and Welfare superintendent, and Dr. and Mrs. R. L. Raiford.

Dr. B. L. Carter's Daughters,

Misses Mary Lee and Raeburn Carter, of Blue Spring Run, Va., spent the Thanksgiving holidays in Richmond.

The American Association for the Study of Goiter,

Composed of goiter surgeons, pathologists, anaesthetists, internists, and radiologists, will hold its annual meeting in Bloomington, Ill., January 23, 24, and 25, 1924. The program, to be issued in a few days, will list a number of excellent papers, demonstrations, and diagnostic and operative clinics. Dr. E. P. Sloan, of Bloomington, is president, and Dr. J. D. Moschelle, of Indianapolis, secretary.

Dr. Edgar W. Robertson,

Onancock, Va., who was very ill for several weeks, is much improved and hopes soon to be at work again.

Dr. Charles R. Robins,

Richmond, acted as toastmaster at the banquet given by the local chapter of the Omega Upsilon Phi fraternity in Richmond, on November 24.

Dr. J. B. Tuttle,

Of Craigsville, Va., is spending the winter in Florida, having made the trip there in his car. He will return to his home in Virginia in the Spring.

Dr. D. Lane Elder

Was elected one of the directors of the DuPont Club of Hopewell, at its annual meeting held last month.

Offer to Endow Chair of Music.

A proposal has been made by Drs. Wm. J. and Chas. H. Mayo to endow a chair of music in the Rochester, Minn., public schools, by annually placing the sum of $2,000 in the hands of the schools' board of trustees.

Elected Members of Board of Country Club.

Drs. Robert C. Bryan and Robert S. Preston, both of Richmond, were among the five new members of the board of governors of the Country Club of Virginia, elected at the annual meeting in November.

Dr. E. M. Magruder,

Charlottesville, Va., was re-elected chieftan of the American Clan Gregor Society at their annual meeting in Washington, recently.

Dr. Alfred B. Claytor,

Bedford, Va., has been elected surgeon of the Watts-Graves Camp, Sons of Confederate Veterans, of that city, for the coming year.

Dr. Edward Latane Flanagan

Announces the opening of his offices in Medical Arts Building, Franklin at Second Streets, Richmond. His practice will be limited to X-ray diagnosis and treatment.

Two Newport News Doctors Have Narrow Escape.

Drs. R. A. Davis and Morris P. Beecroft, of Newport News, Va., narrowly escaped serious injuries on Thanksgiving Day when, with a party of friends, they were on their way to the foot ball game in Richmond. A short distance from this city, the car turned turtle and all of its occupants, except the driver, were thrown clear of the car. All of the men received only slight injuries.

Some Good Hunters Among the Doctors.

Drs. J. W. Abbitt and L. J. Roper, Portsmouth, Va., Dr. H. M. DeJarnette, Fredericksburg, Va., Drs. James Morrison and J. R. Gormen, Lynchburg, and Dr. Thos G. Hardy, Farmville, Va., are among the Virginia doctors who have had some good luck hunting this Fall.

New Dean of Johns Hopkins Medical School.

Dr. Lewis Hill Weed, professor of anatomy at Johns Hopkins University Medical School since 1919, has been elected dean of the Medical School to succeed Dr. J. Whitridge Williams. Dr. Williams, who has been dean of this school for the past thirteen years, recently resigned that he might more fully devote his time to the new women's clinic of Johns Hopkins Hospital, of which he is director.

The Virginia Public Health Nurses' Association

Met in Richmond the last week in November. Practically every section of the State was represented by those interested in health work and reports showed that much good work was being accomplished by the work of these nurses in co-operation with the State Board of Health. Dr. Ennion G. Williams, State Health Commissioner, and Dr. Roy K. Flannagan, assistant State Health Commissioner, addressed the Association at the opening meeting. Dr. Mary E. Brydon, head of the child welfare division of the board of health, presided at a round table discussion of matters pertaining to her department. Several others interested in public health work in Virginia also addressed the meetings.

Rex Hospital Has Addition.

An addition including thirty-five beds for children was recently opened at Rex Hospital, Raleigh, N. C. The money for this addition was given by Mr. W. H. Williamson, of Raleigh, as a memorial to his wife.

Pine Camp Enlarged.

Pine Camp, Richmond's municipal tuberculosis hospital, has been much enlarged and improved and had its formal opening November 17. Appropriate exercises marked the opening of the additions, following which the buildings were inspected by the visitors, and refreshments were served. Great credit is due Dr. E. C. Levy, Director of Public Welfare of Richmond, and his able assistants for their untiring efforts in behalf of the enlargement of this hospital.

Pine Camp was founded by the Richmond Tuberculosis Association in November, 1910 and was taken over by the city in 1916. Former capacity of the camp has been thirty-six patients; with the additions, it is now able to care for eighty-four. It is expected later to increase the capacity to ninety-two beds.

Rear Admiral Cary T. Grayson,

Washington, D. C., delivered an address in Danville, Va., December 5, under the auspices of the Wednesday Afternoon Club. His subject was "Heredity and Training."

Dr. S. Josephine Baker,

Of New York, has been appointed consulting director in Maternity and Infancy and Child Hygiene of the Children's Bureau of the U. S. Department of Labor. Until last Spring, Dr. Baker was for twenty years director of the Bureau of Child Hygiene of the New York City Department of Health.

The Association of Surgeons of the Chesapeake and Ohio Railway

Held their seventh annual meeting at White Sulphur Springs, W. Va., November 16 and 17, under the presidency of Dr. S. W. Hobson, of Newport News, Va. There was an attendance of over 200 and the sessions were interesting and pleasant throughout. On the first afternoon, the members of the Association presented Dr. W. T. Oppenhimer, of Richmond, Va., chief surgeon of the road, with a motor car, as an expression of their esteem and affection, the presentation speech being made by Dr. J. M. Salmon, of Ashland, Ky. Officers elected for the ensuing year are: President, Dr. C. C. Coleman, Richmond, Va.; vice-presidents, Drs. L. L. Bigelow, Columbus, O., J. E. Cannaday, Charleston, W. Va., H. W. Porter, Louisa, Va.; secretary-treasurer, Mr. George E. Meanley, Richmond, Va. Members of the executive committee are: Drs. W. E. Vest, Huntington, W. Va., H. U. Stephenson, Richmond, Va., C. C. Garr, Lexington, Ky., E H. Griswold, Peru, Ind., Eric Twachtman, Cincinnati, O., and W. R. Laird, Montgomery, W. Va.

Xmas T. B. Seals.

Funds from this sale are used to support free tuberculosis clinics, public health nurses, indigent patients at sanatoria, and for preventive work among children, such as fresh air

classes, nutrition classes, summer camps and the Modern Health Crusade. Last year, Virginia raised $55,568.30, the major portion of which was used for health work in the counties and cities in which it was raised. Virginia raised 2.3 cents per capita for population. A per capita rate as high as 8.5 for the population was raised in one state. Can we not better the amount raised in Virginia? Buy your allotment promptly.

Dr. J. Hampton Hare,

Of Newland, Va., was a recent visitor in Washington, D. C.

Physicians' Scholarships Awarded.

The American Child Health Association announces that its resident and travel scholarships for physicians have been awarded to the following: Dr. Charles Armstrong, Salisbury, N. C.; Dr. William W. Bauer, Milwaukee, Wis.; Dr. R. L. Carlton, Winston-Salem, N. C.; Dr. Eugene C. Chimene, Minneapolis, Kan.; Dr. William De Kleine, Saginaw, Mich.; Dr. Seymour Fiske, New York, N. Y.; Dr. Arthur M. Kimberly, Bristol, Conn.; Dr. George A. Lamont, Vancouver, B. C.; Dr. George N. Leonard, Albany, N. Y., Dr. Marie M. Long, Memphis, Tenn.; Dr. George C. Marlette, Bay Minette, Ala.; Dr. Walter R. Moore, St. Joseph, Mo.; Dr. Russell B. Sprague, Yarmouth Port, Mass.; Dr. Thomas D. Walker, Macon, Ga.; Dr. Ruth Weismann, Dorchester, Mass. The purpose of these scholarships is, broadly, to stimulate interest in child health work and to provide means for better training of physicians along this line. One hundred and one applications were received from thirty-six states.

On Democratic Committee of Richmond County.

Drs. H. L. Segar, Warsaw, Va., and B. A. Middleton, Emmerton, Va., have been elected members of the recently reorganized Democratic Committee of Richmond County, Va.

Dr. and Mrs. J. Alfred Riffe,

Covington, Va., were recent visitors in Richmond.

Dr. D. Hunter Marrow,

After spending the summer months at his old home at Union Level, Va., has returned to Daytona, Fla., for the winter.

Sanatorium Destroyed by Fire.

Much credit is due the nurses for their heroism in saving the patients when Gaston Sanatorium, Gastonia, N. C., was almost completely destroyed by fire on the afternoon of November 16. The loss, estimated at $50,000, is only partially covered by insurance.

Dr. William S. Thayer,

Emeritus professor of medicine in Johns Hopkins University, Baltimore, recently addressed the senior medical class of the Medical College of Virginia, his subject being "Bacterial Endocarditis."

Dr. and Mrs. B. L. Phillips,

Richmond, are now much improved after being in a local hospital for sometime for injuries suffered in an automobile accident.

Mary Washington Hospital Awards Diplomas.

Eight nurses were awarded diplomas of graduation from the Mary Washington Hospital, Fredericksburg, Va., November the 9th. Dr. J. N. Barney presided, Dr. Frank C. Pratt presented the diplomas and Dr. C. Mason Smith made the presentation of the hospital pins.

Dr. W. L. Davenport,

Amelia, Va., was among those to make speeches at the opening of the Co-operative Warehouse in Amelia C. H., in November.

Dr. H. Orlando Bell

Has been appointed medical inspector of the Richmond Bureau of Health, to succeed Dr. Henry E. Davis, resigned. Dr. Bell entered upon his duties December 1, and will work with Dr. G. R. Maloney in the control of contagious diseases.

Dr. Bell is a member of the class of '20, Medical College of Virginia and since graduation has been connected with the New York Nursery and Childs' Hospital, and with the Willard Parker Hospital in New York City.

How About Your Magazine Subscriptions for 1924?

Have you placed orders for your magazines for 1924? If not, you can place all of these, new and renewals, through the office of the Medical Society of Virginia. It saves you trouble; it helps your Society. How about sending them in now? State when you wish subscriptions to begin.

Automobile Fatalities for 1922,

Just announced, show an increase of one per 100,000 in fatalities from automobile ac-

cidents in the registration area of the United States, during 1922. Virginia as a whole showed a very slight decrease from six to 5.8 per 100,000. This decrease was marked in Norfolk City, where the rate fell from 18.1 to 8.8 per 100,000. We regret to note, however, that Richmond did not participate in this improvement, her rate showing an increase of four-tenths of one per 100,000. Can't we lower this next year?

Impaired Hearing Helped by X-Rays.

Exceedingly apropos is the publication of a paper on "X-Ray as an Advance in the Treatment of Impaired Hearing" by J. J. Richardson, M. D., F. A. C. S., Washington, D. C., in the wake of a clinic held in Richmond recently during the National Osteopathic meeting. At this time, one of the members of the Osteopathic Association held clinics in this city at which it was stated that deaf people had their hearing completely restored. Dr. Richardson reports improvement varying from a slight degree to a complete cure in not less than 60 per cent of about 600 cases. The X-ray was used by him as an adjuvant, as he states that "Any discernible and corrigible anatomic or pathologic defect should, of course, receive all possible clinical aid" prior to the use of the X-ray.

National Board Bulletin,

Commencing October 1923, is to be published bi-monthly by the National Board of Medical Examiners, from Philadelphia, at the subscription price of 50 cents a year. This periodical has been started for the purpose of keeping the Board's candidates and others interested more fully informed of its program and progress.

In this connection, we might state that Part I only of the examinations will be held in February 1924, the exact date to be named later. Dr. J. S. Rodman, Philadelphia, is secretary-treasurer of the Board, and Mr. E. S. Elwood, 1310 Medical Arts Building, that city, managing director of the Bulletin.

Foreign Health Officers Entertained.

On December 4, the Rockefeller Foundation gave a dinner at Commodore Hotel, New York City, in honor of the foreign health officers representing eighteen foreign governments. These officers have been in the United States for the past three months under the auspices of the Health Section of the League of Nations, for the study and observation of various types of public health organization. Dr. George E. Vincent, president of the Foundation, presided.

The visit of these health officials to the United States represents the third general interchange of public health personnel arranged by the Health Section of the League of Nations. The first was in Belgium and Italy in 1922, and the second in England and Poland in the Spring of 1923. A contribution from the International Health Board of the Rockefeller Foundation, amounting to $60,080 a year, for a period of three years, made possible this international interchange of public health personnel.

American Academy of Ophthalmology and Otolaryngology.

At the annual meeting of this association, held recently in Washington, D. C., Dr. Walter B. Lancaster, Boston, was elected president, and Dr. Luther C. Peter, Philadelphia, secretary.

Number of German Hospitals Close.

Accordings to the *Journal of the A. M. A.*, during 1922, forty-five hospitals were forced to close in Prussia owing to financial stress. This included nine private hospitals with 1,049 beds in Berlin alone.

The Atlanta Graduate School of Physicians and Surgeons,

Atlanta, Ga., will have their formal opening on April 9, 1924. Dr. William Perrin Nicolson is dean, and Dr. Michael Hoke president of the faculty.

Centenary of the Lancet.

In October, the *London Lancet* issued a special number commemorating its one hundredth anniversary. Established in 1823 as a medical weekly, the *Lancet* has weathered full many a storm, but has come through them all as one of the leading medical journals of this day. This journal was established by a London practitioner named Thomas Wakely, and it is interesting to note that in its whole career it has had but five editors, all of them, with the exception of the present one, Sir Squire Sprigge, having been Wakelys. We wish this journal a continuance of its great popularity and influence.

The American Journal of Roentgenology and Radium Therapy,

The official organ of The American Roentgen Ray Society and the American Radium Society will appear in enlarged form in 1924,

the increased pages being given to more illustrations, more abstracts and more original articles. Dr. A. C. Christie who was Colonel in charge of roentgenology in the U. S. Army during the war will be the editor. Dr. James T. Case, Dr. H. K. Pancoast and Dr. W. Duane will be the associate editors with a large collaborating staff of the leading roentgenologists in the country. The subscription price is $10.00 and Journal will be published as formerly by Paul B. Hoeber, Inc., New York.

Burroughs Wellcome and Company

Extend a cordial invitation to the medical profession to visit the exhibition rooms in their new building at 9-11 East Forty-First Street, New York City, just off Fifth Avenue, opposite the Public Library. This firm's general offices for the United States are now installed in this building. Doctors visiting New York at any time will be welcomed to inspect the fine products put out by this Company.

The Southern Medical Association,

At its annual meeting in Washington, D. C., the middle of November, selected New Orleans, La., as the 1924 convention city, and elected the following officers: President, Dr. Charles L. Minor, Asheville, N. C.; vice-presidents, Dr. Robert C. Lynch, New Orleans and Dr. Thomas A. Groover, Washington, D. C.; secretary-manager, C. P. Loranz, and editor of the Association's journal, Dr. M. Y. Dabney. Both of the latter of Birmingham, Ala., were re-elected.

Leprosarium to be Enlarged.

Construction is to be undertaken at once of the new buildings for the Carville, La., leprosarium. As cost of building has advanced since the appropriation was made by Congress, building of the infirmary will be delayed, but accommodations will be added to care for 204 additional lepers. There are at present 174 patients at this institution—some of them blind and much mutilated from the disease. There is already a waiting list of more than 100 and it is estimated that there are many more throughout the United States who should be segregated.

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Experienced interne for 35-bed hospital; one capable of assisting in operations, giving anesthetics, doing laboratory work (no Wassermanns), and would prefer one who could do X-ray work. Address Box 359, Martinsville, Va. (Adv.)

Obituary

Dr. Charles Wesley Astrop,

A prominent physician and citizen of Surry, Va., died in Richmond, November 20, having been in failing health for several years. He was born in Brunswick, Va., August 18, 1858, and studied medicine at the Medical College of Virginia, from which he graduated in 1884. Several years later, he took a post-graduate course in New York. He had made his home in Surry since 1897, and practiced there until several years ago when he retired on account of his health. Dr. Astrop was a member of the Medical Society of Virginia and an ex-president of the Southside Virginia Medical Association. He is survived by his wife and a son, who is connected with the faculty of the University of Richmond. The burial was held at Fork Union, Va.

Dr. John Clancy Parish,

Smithfield, Va., died in his home at that place November 30, after a lingering illness. He was the only child of Mr. and Mrs. Thomas P. Parish, of that place, and was 34 years of age. He graduated in pharmacy from the Medical College of Virginia in 1910 and later returned there and studied medicine, taking his M. D. degree in 1914. At this time he was appointed to an internship at Memorial Hospital, Richmond. Upon completion of this service he returned to Smithfield, where he practised his profession and made for himself a large circle of friends and admirers. His parents and his wife, formerly Miss Allene Moore, of Richmond, survive him. The funeral was held with Masonic honors.

Dr. James Harvey Bogle,

Formerly of Roanoke, Va., died at Sebring, Fla., November 10, after a brief illness. Dr. Bogle was born in Bland County, Va., 55 years ago and, after graduating from the College of Physicians and Surgeons of Baltimore in 1893, located in his native county for several years. While there, he was a member of the Bland County Board of Health. Later, he moved to Roanoke, in which place he practiced until his removal to Florida several years ago. He had been a member of the Medical Society of Virginia since 1896. Dr. Bogle is survived by his wife and several children.

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